BRAITHWAITE'S RETROSPECT.

VOL. XXVIII. JULY—DECEMBER, 1853.

THE

RETROSPECT OF MEDICINE:

BEING

A HALF-YEARLY JOURNAL,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

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ETC.

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ERRATUM.—Page 378, line 5th from the bottom, for "Pilulæ ferri comp. iij.", *read* "Pilulæ ferri comp. ℥ iij."

A SYNOPSIS

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOLLOWING PAGES: SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR. (ARRANGED ALPHABETICALLY.)

AFFECTIONS OF THE SYSTEM GENERALLY.

FEVER, *Typhus.*—Out of eighteen cases treated by the administration of brandy, one only was fatal; in all the rest, the plan pursued was remarkably successful. Half an ounce to an ounce of brandy was given every hour or every half-hour day and night, and a draught every second hour, containing sp. æth. chlorici, ♏x.; ammoniæ carbonatis, gr. v.; aquæ pur. ℥j. As much beef-tea was given as the patients could drink. The head was always shaved, and in most cases a blister was applied to the scalp. (Dr. R. B. Todd, p. 6.)

Yellow.—Quinine is a stimulant, and as depression would succeed the use of the quinine, the remedy should be continued through the case. Sometimes, by this remedy, we may cut short the disease at once, if the case is seen very early. To do this we may give ℥ ss. of quinine and ℈j. of calomel directly, and a similar dose with five grains of James's powder an hour afterwards, followed in two hours by an ounce and a half of castor oil. This treatment will very often cure the disease at once. If it does not, and the disease progresses, twenty grains of quinine may be given for four doses. If deafness has commenced, we should wait until it has subsided. Then ten grains may be given every second hour, and continued according to the degree of headache, pain in the back, congestion, and muscular prostration. During convalescence, three grains may be given three times a day in wine. If the larger doses of quinine be vomited, a large mustard plaster should be applied to the epigastrium,

and another dose given; and if vomiting again occurs, the process should be repeated. Occasionally, however, ʒj. of sulphuric ether and eight or ten drops of creosote may be given to allay any spasm, and we may then wait an hour before again trying the quinine. (Dr. W. J. Cummins, p. 12.)

First clear out the bowels by a dose of calomel or blue pill with a solution of Epsom salts. Then give turpentine in doses of twenty minims three times a day; a little sweet nitre may be mixed with this remedy. If the dejections are bloody or vitiated, give along with the turpentine small doses of opium and castor oil. The auxiliaries are sinapisms and blisters to the epigastrium, emollient enemata, and during the stage of debility, wine negus, beef-tea, &c., and cinchona injections. The turpentine was tried in a very severe case of typhus with excellent effect, in the following form: Spirit of turpentine and spirit of nitric ether of each three drachms, camphor mixture four drachms, compound tincture of lavender two drachms. A teaspoonful to be given in a wineglassful of water every four hours. (Mr. J. Laird, p. 16.)

Rheumatism.—One of the exceptional cases in which lemon-juice is of no avail, is that of a gonorrhœal character. A woman, aged 30, was admitted into Guy's hospital with rheumatism and a copious yellow discharge from the vagina. All ordinary remedies failed to relieve, until the purulent discharge had been removed by ʒj. doses of cubebs. (Dr. G. O. Rees, p. 25.)

Scrofula.—In the case of a boy, protein, given in three-grain doses, three times a day, the dose being afterwards increased to five grains, produced the most remarkable effects—iron and other tonics having been previously given without any improvement. (Mr. J. Taylor, p. 31.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—In a most severe case of this disease, (the patient being a girl aged 16), in which the symptoms were particularly aggravated, the following treatment

proved very successful. She was ordered to inhale chloroform, and to have a suppository containing two grains of opium, at once, and a draught with four grains of camphor and some chloric ether every two hours. Afterwards eight grains of quinine were ordered to be given as a suppository every hour for six times. The next day she was decidedly quieter, and the draughts and suppositories were given at intervals of four hours. From this time she rapidly improved, and in three weeks was discharged. (Dr. Wilson, p. 73.)

Convulsions, *Epileptic.*—In the case of a child one year and seven months old, after all means of relief had been tried without effect, and the patient seemed sinking fast, it was determined to try chloroform internally. Five-minim doses were given after every fit. After the first dose, the child slept almost continuously. The remedy was ordered to be given three times a day, the dose being afterwards increased to seven minims, but the convulsions were never again repeated, and after the first dose of chloroform, the child rapidly improved. (Mr. H. Rowe, p. 64.)

Epilepsy.—In two cases of this disease, the operation of tracheotomy was performed with the best results. It was found that the operation was best performed thus: The incisions were made in a transverse direction above the thyroid body, the muscular fibres being divided freely, and the trachea laid bare just below the cricoid cartilage. The main incision into the trachea was also made transversely, but from the middle of the lower edge a short downward incision was added. (Dr. J. C. Bucknill, p. 64.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Aneurism.—M. Bonnet announces the complete cure of an aneurism of the subclavian artery by the application of chloride of zinc paste. The caustic penetrated by imbibition into the deeper part of the tumour, and produced complete coagulation of blood, which was detached

without any hemorrhage. The eschar separates in about eight days after the application of the caustic, but by successive applications it may easily be retained for a month or longer, or the superficial portions may be removed by a bistoury. (M. Bonnet, p. 221.)

It has recently been attempted to cure aneurismal tumours by injecting into them a few drops of a concentrated solution of the perchloride of iron. Several cases have been recorded in which the operation was successful. (M. Pravaz, p. 218.)

Erectile Tumour *of the Orbit.*—The following mode of treatment was quite successful. A solution of lactate of iron (eight grains to one drachm of distilled water) was injected into the centre of the tumour. Violent pain in the head and vomiting succeeded, but these gradually disappeared, and the recovery was perfect. Dr. Brainard, the author of this paper, believes the injection of the perchloride of iron into the blood to be exceedingly dangerous, because it is a substance abnormal to the constitution of the blood, and because it produces instant coagulation. In the case of the lactate of iron, its components already exist in the blood, and its effects are not sudden coagulation, but a thickening of the coats with deposition of coagulable lymph from subacute inflammation being induced. (Dr. Brainard, p. 222).

AFFECTIONS OF THE RESPIRATORY ORGANS.

Aphonia.—In cases of aphonia arising from chronic inflammation of the larynx and fauces, paint over the throat, externally, a strong alcoholic solution of iodine (ʒ j. to ℥ j). Where there is a thickened and mammillated state of the pharyngeal mucous membrane, a solution of silver, topically, is more preferable. (Dr. Bennet, p. 113).

Emphysema Pulmonum.—This disease in the majority of cases occurring in our large towns, in vitiated atmospheres, and where the patient has been insufficiently

nourished, is a blood disease in its origin, and is of an asthenic character. It is to be remedied by small doses of iron, quinine, and tonics, with a generous diet of animal food and porter. One grain each of sulphate of iron and of quinine may be given in infusion of roses with syrup of ginger. Dry cupping between the shoulders, the inhalation of creosote (twenty drops to a pint of boiling water) each night, a stramonium cigarette, or twelve drops of chloric ether, have all been used successfully for warding off an attack of nocturnal dyspnœa. A favourite remedy also is the fumes from a slip of lighted nitre touch-paper; and a case is mentioned where a large dose of the hydrochlorate of ammonia gave great relief. (Dr. G. Corfe, p. 104).

Hooping Cough.—That the solution of nitrate of silver removes the excited state of the extremities of the branches of the par vagum, is proved by the fact that, after all inflammation has passed by and the whoop only remains, the topical treatment is by far the most effectual. The most convenient apparatus for the application of the solution, is, by the sponge and whalebone. The strength of the remedy should be regulated by the stage of the disease, the greater the degree of inflammation the weaker should be the solution, and its strength should be increased as the disease decreases. Perhaps we may say at first fifteen grains to the ounce; in other cases two scruples to the ounce may be used with advantage. The application should be renewed at least every second day. If the whoops are very violent, however, or the remedy has not been applied until the disease has reached its height, the applications should be more frequent. It may be noted that in all cases where it is necessary to introduce the sponge into the larynx, the finger should be introduced into the patient's mouth, so as to touch the tip of the epiglottis, along the surface of which the instrument may be glided down with certainty to reach the rima glottidis. (Dr. E. Watson, p. 109).

In the case of a girl, 16 years old, afflicted with hooping cough, the inhalation of a little chloroform during

the paroxysm, in two days removed the whooping sound. The best way to use it in cases of children, is to drop about thirty drops in the palm of the hand, and hold it near enough to allow a due mixture of atmospheric air with the vapour. The best time is, before the irritation in the chest has increased to a cough. It should be repeated on each return of the irritation. (Dr. F. Churchill, p. 108).

Lungs, *Inflammatory Affections of.*—In a paper upon the different sounds of the respiratory apparatus, Dr. T. Thompson observes, that in proportion as sounds are confined to inspiration, they afford reason for depletion; in proportion as the rhonchi became bubbling they indicate secretion, and suggest a discontinuance of antiphlogistic treatment. (Dr. T. Thompson, p. 88).

Phthisis.—To relieve the cough, place from four to ten drops of creosote in the bottom of an old teapot, and then pour a small quantity of boiling water over it. The vapour must be inhaled through the spout, which must be protected by being covered with a little flannel. (Dr. T. Inman, p. 106).

Tracheotomy.—For some valuable practical remarks on this operation, by Dr. Edwards, of Cheltenham, see page 229.

AFFECTIONS OF THE DIGESTIVE ORGANS.

Artificial Anus.—In a case where the operation for artificial anus has been performed as a temporary resort, the greatest discomfort arose from the fæces passing invariably through the artificial opening, and not through the rectum. At length, when life had become a burden to the patient, it was suggested that some substance, as a piece of brown soap, introduced into the rectum, might induce the return of peristaltic action, and the necessary tenesmus for the expulsion of the contents of the canal. The expedient was perfectly successful, and at the endof the two weeks the artificial opening was quite

healed, and the fæces passed by their natural outlet. (Dr. W. Macdonald, p. 258).

Colic.—Whatever may be the kind of colic, the first thing is to get the bowels open. First put the patient in a warm bath, and while in it, let him have a warm water enema; this is to be repeated after a time, so as to distend the colon. Then give a pill every three hours, until the bowels act, composed as follows: one drachm of compound extract of colocynth, and three drops of croton oil; divided into twelve. Leeches frequently do good, but the majority of cases do not require them. In the more obstinate and complicated cases, the use of opium will be of the greatest benefit. (Dr. R. B. Todd, p. 155.)

Constipation, *Obstinate.*—Pass galvanic currents from the mouth to the anus. In this manner it is used most effectually, though the current passed in various directions may be sufficient. In cases where the muscular tone of the bowels has been lost, this would appear a valuable remedy. (Dr. R. Christison, p. 153.)

Dysentery.—In Ceylon it commonly appears as colonitis. There they support the patient from the first, depleting, however, by leeches applied to the abdomen; then Dover's powder and ipecacuanha, three grains every third hour, and afterwards these combined with astringents. Quinine is combined with these remedies, twelve or sixteen grains being given in the twenty-four hours. Nitrate of silver injections thrown into the colon are sometimes very beneficial. (Dr. Cameron, p. 165.)

Hemorrhoids.—The following would seem an excellent prescription for restraining the flow of blood:—℞. Olei terebinth., ʒ ss.; tinct. kino, syrup zingib., ā ā ʒ j.; aquæ cinnamomi, aquæ mollis, ā ā ʒ iij.; misturæ acaciæ, q. s. ad bene miscendum. Fiat haustus bis terve die sumendus. (Dr. W. S. Oke, p. 260).

Hernia, *Reducible.*—The contents of the hernia having entered the abdomen, and the spermatic cord being pressed upwards out of the way, twenty or thirty drops

of tincture of iodine, tincture of cantharides, or sulphuric ether, are to be injected by a fine trocar and canula into the neck of the sac, or into the vicinity of the external abdominal ring; a slight compress is to be applied to the wound produced by the trocar, then a well-fitting truss is to be slipped down over it, and the patient must keep the recumbent position for a week or two. In some cases a tenotomy knife was previously introduced, and the neck of the sac scarified, which greatly facilitated the introduction of the trocar. (Dr. Pancoast, p. 232).

Mr. Savory, tutor at St. Bartholomew's Hospital, records four cases, in which, though the taxis at first failed to reduce the hernia, yet, under the influence of chloroform, the taxis being again applied, the reduction was easily made. (p. 236).

Scrotal.—In describing an obstinate case of this kind, Mr. Hilton remarked that the main obstacle to reduction was the loaded condition of the blood-vessels of the protruded part. This was to be obviated by, first, decreasing the quantity of the circulating medium generally, by purgation, diuresis, and abstinence from fluids; and, secondly, by local means to constringe and unload the congested vessels of the incarcerated omentum, as by the recumbent position and the application of pressure and of cold. It may be remarked that cold, by producing contraction of the dartos, affords the best and most uniform pressure which can be exerted. (Mr. J. Hilton, p. 243).

Liver Disease.—The observations of Dr. Jones lead him to believe that the effect of mercury is undoubtedly to produce very great congestion of the liver; hence, in all inflammatory affections of this viscus, it would appear to be a most improper remedy. (Dr. C. H. Jones, p. 165).

Sarcina Ventriculi.—In a case of this disease, of many years' standing, the following was the successful treatment. At first the diet was the same as that ordered commonly in diabetes mellitus. Three grains of sesquicarbonate of ammonia were given three times a day in

one ounce of infusion of quassia, with one to two drachms of sulph. sublim., to open the bowels. Afterwards the same diet was continued, but the medicine was sodæ hyposulph. ʒ vj.; infus. quassiæ ℥ xij., ℥ ss. ter die. The only other variation made was, that precipitated sulphur was preferred to sublimed sulphur; and one ounce of cod-liver oil was given three times a day. (Mr. R. Neale, p. 131).

Vomiting, *Obstinate.*—In a case where all the usual remedies had been tried in vain, a small quantity of chloroform was inhaled to quiet the stomach, but not to produce insensibility. Half a grain of morphia was then given and the inhalation renewed. The patient was kept fully under its influence for a few minutes, and when consciousness returned he was free from all feeling of sickness. The inhalation was kept up slightly for an hour and a quarter. He had no return of the sickness for twenty-four hours. A slight return was checked afterwards in the same way. (Mr. G. H. Heath, p. 412).

Tape-Worm.—Dr. Christison used at first eighteen-grain doses of the oleo-resinous extract of the male-shield-fern, but he now recommends twenty-four grains, as he finds there is much greater certainty of getting rid of the worm, and less uneasiness felt. The *Lastræa Filix-mas* is the proper species to be used. Dr. Christison believes the plant to be efficacious enough at any season, if it be used fresh, as the extract he used was made with roots collected in February, two months before the young fronds in Scotland begin to peep above the ground. (Dr. R. Christison, p. 156).

Thrush.—Dr. Jenner says this disease depends upon the presence of a parasite. It is speedily removed by applying a solution of sulphite of soda, ʒ j. to the ℥ j. of water. The secretions of the mouth, being acid, combine with the alkali and set the sulphurous acid free, which is the active agent in destroying the parasite. (Dr. W. Jenner, p. 297).

AFFECTIONS OF THE URINARY ORGANS.

BLADDER, *Gout in the.*—In this disease the mucous membrane of the bladder readily secretes pus. If this is not freely evacuated, the urine becomes alkaline from the retention of a small portion of it, and the subsequent formation of ammonia by the decomposition of the urea. This alkaline urine again keeps up the irritability of the bladder which thus goes on secreting pus. There is also, in this disease, frequently incontinence of urine, not because the sphincter vesicæ is paralyzed, but because the bladder will not allow the accumulation in it of even small quantity of urine. In other cases there is an opposite condition; the patient may have retention of urine. This is easily explained: in the former case, the gouty poison was irritating the mucous membrane; in the latter it has affected the muscular coat. Now, if, in these cases, we find it clearly proved that the man has the gouty diathesis, and that there is no stone in the bladder, we may consider the eruptions to arise from gouty inflammation attacking the bladder. In the treatment, we must first counter-irritate, but not with turpentine or cantharides, for obvious reasons, but with mustard or strong ammonia. To relieve pain, if it be that form of the disease in which pus is generated, we may apply opium endermically, or apply an opiate liniment over the bladder, or we may give an enema containing opium by the rectum, repeated or not according to the relief obtained. In these ways all kinds of irritability of the bladder, even that produced by cantharidine may be relieved. It should be borne carefully in mind, that, whenever gout attacks internal organs it is a disease of an asthenic character, and therefore depletory measures should in no case be employed. (Dr. R. B. Todd, p. 176.)

Irritability of.—A patient, of nervous temperament, with soft and flabby muscles, had irritability of bladder, which ordinary remedies had failed to relieve. A solution of nitrate of silver, twenty grains to the ounce, was introduced into the bladder, and so great was the relief that

the symptoms entirely disappeared for six months. At that time the same treatment repeated completely removed the symptoms. (Mr. W. Reeves, p. 270.)

Calculus, *Uric Acid.*—In a case of stone in the bladder, in which the patient occasionally passed a gritty sediment, considered to be lithic acid, Mr. Bulley ordered the following: ℞. Potassæ. bicarb. gr. x.; sodæ carb. gr. xij.; potassæ nit. gr. viij.; Ft. pulv. To be dissolved in a tumbler of tepid water, and taken twice a day. In six months all attempts to discover the stone proved vain, and the gritty deposit had entirely disappeared. The greatest advantage may also be derived in these cases from taking two to four drachms of bicarbonate of potass, dissolved in thirty or forty ounces of water in the twenty-four hours. (Mr. F. A. Bulley, p. 281.)

Epididymis, *Inflammation of.*—Pencil the scrotum with collodium. In five cases in which it was applied, three were cured within six days by one application; the fourth in seven days after two applications; and the fifth in eleven days after three applications. (Dr. Lange, p. 283.)

Hydrocele.—The colour of the fluid may be easily diagnosed in common day-light by looking through a tube, one end of which is firmly placed against the tumour. In the treatment, tincture of iodine is generally used in London as an injection. Mr. Lloyd uses the ointment of the nitrico-oxide of mercury, passing a tube smeared with it through the canula, and moving it about in the inside of the sac. Mr Wormald prefers the palliative treatment, making twelve or twenty punctures with a full-sized needle, and repeating the operation when the sack refills. (Mr. E. Stanley, p. 283.)

Lithotomy, *New Operation for.*—This operation may be described briefly, as follows: The rectum is cut into from the median line of the perineum and thus freely dividing the commissure of the sphincter ani. From this dissect upwards in the median line to the membranous urethra which is slit up as far as the edge of the prostate, the knife being guided by a previously intro-

duced staff. The prostatic urethra is then dilated until of sufficient size to allow of the introduction of the forceps and the extraction of the stone. The bladder and the prostate are therefore not wounded. (Mr. E. A. Lloyd, p. 266.)

Renal Disease, *Acute.*—Where we have albuminous urine and dropsy, the greatest possible care should be taken to guard against cold, because it is the chief cause in the production of renal disease, and therefore must tend to perpetuate it, if it already exist. In cold weather the patient must be absolutely compelled to keep in bed, both on account of ensuring the horizontal position, and also the equable warmth of the skin. The diet should be scanty, and, unless specially indicated, alcoholic stimulants should not be given. The next thing is to obtain free action of the skin and bowels; the first by the hot-air bath and diaphoretic medicines, the latter by saline aperients, and the pulv. jalapæ comp. In no case must stimulating diuretics be given. When the case has become chronic, then, at all hazards, we may be necessitated to use them. When the acute stage has passed and there is danger of it merging into a chronic form, if the case does not progress favourably, the patient should at once be removed to the sea-side, or better still, take a sea voyage. When cerebral symptoms are produced by the accumulation of urea in the blood, the congestion of the kidneys not allowing it to pass through them, we must resume a moderate quantity of blood by cupping over each kidney, at the same time acting on the bowels by elaterium, or the comp. jalap powder, with a few grains of calomel added. The head must also be kept cool, and, if the symptoms are persistent, a cold lotion or iced-water must be applied to the shaved scalp. (Dr. G. Johnson, p. 166.)

Renal Dropsy, *Acute.*—1. General bleeding, or cupping on the loins, or the daily application of large mustard poultices. 2. Hydragogue cathartics, as the pulv. jalap. co., relieving the serous accumulation in the blood-vessels, and aiding elimination. 3. Excite the action of

the skin by liq. ammoniæ acetatis, either alone, or with ipecacuanha and camphor mixture, and by the hot-air bath. 4. Keep the patient in the horizontal position, favouring the flow of blood from the kidneys. Lastly, when the albumen ceases to pass through the kidney, as the patient will be getting anæmic, give the citrate or some other preparation of iron. (Dr. Budd, p. 31.)

Retention of Urine.—In cases of retention of urine from stricture, and where extravasation is also present, so great are the difficulties frequently attendant upon the operation of opening the urethra behind the stricture, that Mr. Cock thinks it more expedient, (where it is necessary to make an outlet through the perineum), to make an incision down to the neighbourhood of the urethra, and having laid bare the site of the canal, to introduce the catheter through the wound in the urethra, into the bladder. If the opening cannot be easily found, he subjects the patient to no further examination, and he has generally found that after this operation the urine has speedily made its way through the incision. Afterwards, when the swelling has diminished, and the parts have become quiet, the instrument may be generally passed through the wound into the bladder. (Mr. E. Cock, p. 272).

Stricture of the Urethra.—Dr. Dick operated in a case of stricture as follows: Making a very small opening above the stricture through the integuments into the urethra, he introduced a curved tenotome and divided the stricture from before backwards. The ready passage of the sound proved that the stricture was completely divided. (Dr. H. Dick, p. 280.)

New Director for.—In his operation by external incision, Mr. Syme has frequently found the inconvenience of not being able by ordinary instruments to thoroughly divide the contracted portion of the urethra. To this fact, Mr. Syme believes, is owing the relapses said sometimes to take place. He has had a solid director recently made, but with a long slender portion, which is grooved, and this latter part being much smaller than that usually

employed, passes with more readiness completely through the stricture. The operator now cuts through the integuments above the stricture into the groove, runs the knife down until the contraction is completely divided, as is readily seen by the thicker portion of the director passing easily through the whole length of the canal. (Prof. Syme, p. 279.)

DISEASES OF THE SKIN, &c.

Carbuncle.—If the carbuncle is exceedingly painful, and the inflammatory action very great, apply fomentations and poultices for twenty-four hours. Then cover it over with the common lead or litharge plaster of the shops, spread on leather. The plaster is best without any admixture. Its chief value is, that it promotes the perspiratory exhalation from the skin. (Mr. R. Flint, p. 311).

Erysipelas.—Salts of iron taken internally have been observed to be valuable in erysipelas. M. Aran, to facilitate their application, makes a preparation *(ferruginous collodion)* formed by mixing equal parts of collodion and an etherial tincture of perchloride of iron. Spread on the affected part it is said to have proved very valuable. (p. 428).

And Paronychia.—The following lotion should be used warm: Three grains of burnt alum, two grains of sulphate of zinc, and two grains of acetate of lead, to every ounce of water. (Dr. F. J. Brown, p. 305).

Pityriasis Capitis.—Apply nitrate of mercury ointment made softer by diluting it with almond oil in cases where there is dyspepsia. A few doses of alkali and bitters, in addition, will do good. Where the trunk is affected, apply, every second or third day, by means of a sponge, a solution of nitrate of mercury in distilled water, much weaker in strength than the ointment. (Mr. G. Duplex, p. 304).

Wash the head every morning in cold water, and give two tablespoonfuls of the following three times a day: One drachm of sesquicarbonate of soda, dissolved in six ounces of any bitter infusion. (Mr. J. O'Connor, p. 304).

Apply the following lotion: Fresh sulphuret of potash ʒ j., distilled water ℥ iij. It may be used once a day. (Mr. J. Winzar, p. 440).

Psoriasis.—Let the diet be nourishing. ℞. Potass. acet ʒ ij.; aquæ ℥ iij. Of this one drachm to be given in a little water three times a day. Locally, the limbs to be placed for five minutes in the morning into a tepid bath, containing one drachm of bicarbonate of soda. The scales to be gently removed with a soft flesh brush, and then the following applied:—℞. Plumbi diacet. sol. ℥ j. ʒ vj., sol. mur. morph. ʒ ij.; a teaspoonful to be mixed with a tablespoonful of cream and applied to the limbs. (Dr. R. Crawford, p. 304).

Purpura Hemorrhagica.—In a case of this disease occurring in a child four years old, the following mixture (the active remedy being turpentine) was given with the most satisfactory results. ℞. Olei terebinth. ℥ ss.; ol. ricini ℥ j.; mucilaginis, sacchari, āā, q. s.; olei caroph. gtt. iv.; aquæ dest. ℥ viij. Misce ut fiat mistura, cujus sumat cochlearia ij. vel iij. bis vel ter in die. (Mr. W. Smith, p. 424).

Give five-grain doses of gallic acid every three or four hours. (Mr. T. P. J. Grantham, p. 423).

Ringworm. — This disease is commonly called in this country Porrigo scutulata. It is a disease in the interior of the roots of the hairs. M. Bazin recommends an ointment composed of lime and carbonate of soda, equal parts, with lard thirty parts. If the hairs are removed, then a solution can be applied to the hair follicles, in which are situated the prolific spores of the fungus. In this case any of the following remedies may be used:— A solution of bichloride of mercury, 1 part to 250 of water; or 1 part of acetate of copper to 500 of lard: One part of pernitrate of mercury to 30 or 40 of water

is an excellent remedy, but is very powerful, and should be used cautiously. A good ointment may be likewise made by mixing 1 part of sulphate of copper, 3 parts of alum, to 20 or 30 parts of lard, according to the age of the patient. Chlorine water might also answer the same end; but probably the most efficacious agent for the destruction of this vegetable growth is sulphurous acid. (M. Bazin, Dr. E. A. Parkes, p. 301).

Snake-bite.—Arsenic has been recently employed for the treatment of these cases, and it is singular that persons having been bitten by snakes recovered completely by this treatment, without any of the poisonous symptoms of arsenic being manifested. Mr. Ireland prescribed liquor arsenicalis ʒ ij.; tinct. opii gtt. x.; aquæ menthæ pip. ℥ iss. To this quantity half an ounce of lime juice was added, and the medicine taken in an effervescent form. A grain of arsenic every half-hour looks formidable treatment, but it was certainly successful in snake-bite, and may be so in hydrophobia. Arsenic would seem to stimulate specifically the semilunar ganglion and its tributaries, presiding over the organic life of our bodies. (Mr. B. Travers, jun., p. 422).

Tinea Favosa.—Apply a solution of sulphurous acid constantly to the scalp. Afterwards, zinc ointment may be applied. This disease depends upon a parasitic growth which is destroyed by the sulphurous acid. The solution may be made by saturating water with the gas and then mixing ℥ ij. of this to ℥ vj. of water to make a lotion. (Dr. W. Jenner, p. 296).

Ulcers.—Mr. Wells has used, in the treatment of ulcers, two kinds of galvanic apparatus. First, a single pair of plates, viz., an oval plate of zinc from one to three inches in the long diameter, and a plate of pure silver of the same size and form, the two being connected by a silver wire soldered to the back of each plate. The second is Pulvermacher's electric chain, which he has used with six and eighteen elements. The following are his conclusions with regard to the value of these in ulcerations. 1. To secure the effects of the apparatus, it is necessary

that the surfaces of the two metallic plates be perfectly smooth and clean, and that they should be applied to the body without intervention of any substance whatever. 2. If two slight excoriations, two ulcers or suppurating surfaces, upon a limb or any part of the body, be acted upon by a pair of plates, the zinc being applied upon one, the silver on the other, the surface beneath the silver rapidly cicatrizes, while that beneath the zinc is in two days converted into a superficial eschar. If the plates be still kept applied, the eschar extends to the subcutaneous cellular tissue, and presents all the characters of a slough produced by caustic potash, except that the dead tissues are a little less compact. 3. On the third day the surface level of the skin and granulations of the skin is often uniform, the well-known marginal blue rim announcing the commencement of cicatrization. When this point is attained, it is better not to apply the apparatus again, but to employ simple water-dressings, or, if there be any tendency to flabbiness in the granulations, dry lint, and a strap of adhesive plaster. 4. When the zinc plate is applied upon the superior portion of a very large ulcer this portion alone improves in appearance, while the inferior portion degenerates; but if the plate be applied upon the lower portion only, the the whole surface of the ulcer improves equally. 5. In cases where several ulcers exist upon a limb, and the zinc is applied to a superior, the silver to an inferior one, all the ulcers situated in a direct line between the two plates improve in appearance, become healthy sores, and cicatrize, while those on either side of the current remain unaltered, and sometimes degenerate. 6. When the silver plate is applied upon the extremity of a fistulous sore the effect does not extend beyond the edges; but if a projecting portion of the silver be carried to the bottom of the fistula, granulation rapidly follows. It is very easy to perforate the silver plate by a screw, the point of which is smooth, and adapted in size and shape to that of the fistula. 7. In several cases, normal innervation has been restored in paralysed parts under the use of this apparatus, the zinc being placed superiorly, and

the silver inferiorly, so as to include as nearly as possible the whole of the paralysed part. Disordered function of particular nerves has been also remedied, by so placing the two plates that the nerve lies between them. S. In ordinary cases of ulcer Mr. Wells prefers the plates to the chains, where they can be applied without producing painful or injurious pressure. The chains are preferable where ulcers are situated over bones, or are too sensitive to bear metallic pressure. (Mr. T. S. Wells, p. 316).

Indolent.—The principle in Mr. Gay's method of treating ulcers which have resisted all other modes, is to relieve the tension of the skin or other tissues, by making incisions at right angles with the line of tension; or where the tension is at the edge of the sore, to supply new skin altogether by a species of plastic operation. (Mr. J. Gay, p. 313).

Mr. Chapman, of Lower Seymour-street, proposes a modification of Mr. Gay's new operation, where the edges of the ulcer are adherent to the tissues beneath; this is, to glide a double-edged bistoury under the tense margins of the sore, so as to set them free, and allow of their edges being brought as near into contact as possible across the suppurating surface. (p. 315).

FRACTURES AND DISEASES OF BONES AND JOINTS.

Anchylosis.—In true anchylosis, the callus may be broken up. Langenbeck's plan was as follows: The pelvis having been fixed, supposing the joint to be that of the knee, extension was carefully and slowly made if the limb was flexed, and flexion if the limb was extended. The force employed must be carefully regulated by the surgeon himself according to the nature of the case. The degree which the callus has yielded must be preserved until the next time, passive exercise being used during the interval. If there be great care exercised, little or no inflammation may be set up. The patient

should be subjected to the same treatment every two or three days. Three or four weeks are commonly sufficient to restore the action of the joint; but sometimes two or three months are necessary. (Dr. W. H. Hingston, p. 202.)

Fractures.—For a new method of treating fractures, by means of a jointed splint, whereby it can adapt itself to the exact shape of the limb, see p. 183. (Mr. Winchester.)

For a description of Mr. Greenway's improved fracture apparatus, and its advantages, see p. 181.

Knee-Joint, *Excision of.*—The following description of the operation of excision of the knee-joint as performed by Mr. Jones, of Jersey, in a case under his care, will show the formidable nature of the operation, and can scarcely fail to be interesting. The case was one of extensive ulceration of the cartilages. It is gratifying to know that the result was completely successful. It was performed as follows: A longitudinal incision was made on each side of the knee-joint, midway between the vasti and flexors of the leg, full five inches in extent; rather more than half the length was over the femur, and rather less than half over the tibia. These two cuts were down to the bones; they were connected by a transverse one just over the prominence of the tubercle of the tibia, care being taken to avoid cutting the ligamentum patellæ by this incision; the flap thus defined was reflected upwards, the patella, its ligament, and the joint thereby exposed. The synovial capsule was cut through as far as it could be seen; the patella and its ligament were now drawn over the internal condyle, while the joint was kept extended. It was next forcibly flexed, the crucial ligaments, almost breaking in the act, only required a slight touch of the knife to divide them completely; the articular surfaces of both bones were thus completely brought to view, and nearly two inches of the femur and half-an-inch of the tibia were sawn off, the soft parts being drawn aside by assistants. The external condyle of the femur was found hollowed out by

a large abscess, and it was necessary to saw off a portion of the carious bone, and to gouge the remainder, until healthy cancellous tissue was reached. The entire synovial membrane was in a state of pulpy degeneration, and was carefully dissected off. The hemorrhage had been rather great, but had now almost ceased, and no vessel required deligation. The blood was sponged out of the wound, the patella (after the diseased portion had been gouged out) and its ligament was replaced, as nearly as possible, in their natural state, the bones brought in apposition, the flap brought down and held by sutures, the limb bandaged on a slight under-splint and laid in a box, the wound covered with moist lint, and the boy put to bed yet asleep. The operation occupied full twenty minutes, and was performed while the patient was under the influence of chloroform. (Mr. G. M. Jones, p. 195.)

Knock-Knees.—An operation is described by Dr. Mayer, of Wurzburg, whereby this deformity was remedied. The front and inner side of the head of the tibia having been deprived of integument and periosteum, a wedge was cut from this portion nearly of the thickness of the bone. By straightening the limb the bony surfaces were brought in contact, and the limb acquired its natural shape. In a month the parts were completely healed and the weight could be borne upon the leg. Soon afterwards the other leg was operated upon with the like success. (Dr. Mayer, p. 208.)

VENEREAL AFFECTIONS.

Bubo.—Puncture, if performed by the lance-headed needle of Dieffenbach rarely fails to successfully cure bubo. The needle should be introduced into the tumour at the lower part and pushed up into the pus; on its withdrawal, and on gently squeezing the bubo, the matter will flow out. The opening should now be cleansed and closed by isinglass plaster, collodion, or lint, firmly applied. The puncture must on no account be re-opened.

The bubo must be again tapped as often as it is filled by pus; the quantity becomes less after each operation, and at last is completely eradicated. (Mr. J. L. Milton, p. 284.)

If the inflammation is not great, apply layer after layer of collodion until a powerful compression is produced. If there be inflammation, previously apply leeches. (Dr. Clairborne, p. 228.)

Chordee.—When the penis is relaxed, cover it with a layer of collodion. In a case related, this prevented the erection; but it returned when the collodion was removed. (M. Doringer, p. 288.)

Gleet and Obstinate Gonorrhœa.—If there be no stricture, use nitrate of silver injections, raising the strength from one grain to ten grains to the ʒj. of water. The pipe of the syringe should at least be two inches long, because on the lower surface of the urethra there are certain sensitive spots, and so long as these exist, the discharge will not give way. If the injections fail the urethra should be sounded, and if a stricture is found, the bougie must be used. There is an intermediate state of stricture, one in which it is forming, and in which the urethra feels granular. In this state the remedy is the bougie, perseveringly used. If, however, the injections fail and no stricture be found, then a blister should be applied (see Vol. xxiv., p. 351.) This is the quickest, safest, and most efficacious remedy which has yet been proposed. After the blister the patient should be kept quiet for three or four days, and when the blister begins to heal up, a few mild injections should be given. Zinc. sulph. gr. x. ad ℈j.; sp. camph. ηxx.; aquæ destil. ʒj. A teaspoonful to be used three times a day. (Mr. J. L. Milton, p. 289.)

AFFECTIONS OF THE EYE.

Amaurosis.—It is singular what a small amount of strychnia sometimes produces wonderful effects. In a case of this disease succeeding retinitis, the following pills were

prescribed: Strychnia one grain, ext. gentian six grains; to be divided into twelve; one to be taken every night. In a week the patient was greatly improved, and in two months vision was completely restored. (Dr. D. Griffin, p. 325.)

Distichiasis.—The following method of treating single hairs when inverted is worthy of attention. Place the horn spatula within the lid, and make an incision with a small knife down to the root of the inverted lash, wait until the hemorrhage has ceased, and then apply a point of nitrate of silver down to the bottom of the wound, by means of a porte-caustique, and remove the lash. This plan seldom fails, though it frequently destroys two or three of the neighbouring cilia. (Mr. W. R. Wilde, p. 440.)

Epiphora.—A frequent cause of this disease is displacement of the inferior punctum, so that the tears never reach the orifice at all. The canal must be slit up from the punctum, to such an extent as to carry back the orifice to that part of the conjunctival surface where the tears are collected. The wound should be kept open for a few days, that the canal may be converted into a groove. (Mr. B. Bell, p. 327.)

Iritis.—Having reduced the inflammation by ordinary measures, give mercury according to the severity of the case and the vigour of the patient, one or two-grain doses three times a day, until the system has become influenced. When the acute stage has passed, a few grains of powdered bark assists in re-establishing tone in the vessels, and repressing lingering congestion. A corresponding change in diet should also now take place. Aconite is sometimes an admirable remedy, but it is uncertain, and sometimes dangerous in its action. It may be used in those cases which resist ordinary treatment, in doses of ten minims of the tincture three times a day. The greatest caution should be observed in its use. In the *syphilitic disease*, if there be racking pain about the globe, forehead, and temple, we may give

an opiate, when the dilatation of the pupil is fully effected by belladonna. We may use simple opium, or the pulv. ipecac. co., or a preparation of morphia, or apply the mercury and opium ointment or the belladonna liniment to the seat of pain. In all cases of iritis, we should apply belladonna round the orbit, keep the patient in a darkened room, and abstain from giving opium until dilatation of pupil be effected. In syphilitic iritis turpentine is the remedy introduced by Mr. Carmichael, of Dublin, and may be given with great advantage. One drachm may be given three times a day, made into an emulsion. Blisters are very valuable, but should be applied behind the ear, or to the nape of the neck. (Mr. J. France, p. 321.)

Purulent Ophthalmia, *in Infants.*—If the inflammation is excessive, the conjunctiva may be scarified, and fomentations employed: but these are exceptional cases. The bowels may be opened in the first instance by the grey powder with rhubarb, and afterwards by castor oil. Then the eye must be thoroughly cleansed from all purulent secretion by ablution, or by means of a syringe (a sponge should not be used for any other purpose, on account of the contagious character of the disease). The agglutination of the palpebræ may be prevented by the application of some mild unirritating ointment smeared over the lids, as by the ung. cetacei, or ung. zinci. Then a lotion, containing a grain or a grain and a half of nitrate of silver to the ounce, may be used, two or three drops being introduced upon the conjunctiva three times daily, taking care to cleanse the eye first. When the complaint is subdued, and lest the eye should become discoloured, we may employ a lotion composed of sulphate of zinc two grains, wine of opium two drachms, rose water six drachms. If this does not answer, an alum wash may be substituted. If an ulcer should form and an opening be effected into the anterior chamber, a point of nitrate of silver should be introduced, and if the iris protrudes, belladonna should be applied. (Mr. J. France, p. 333.)

Squinting.—This condition has been recently cured by the use of prismatic spectacles. Supposing the squint to be internal, for example, the prismatic glass is placed to the outer side of the eye, so that at length by the constant straining efforts of the eye, to obtain an accurate view, the eye-ball is gradually drawn more into its natural position. As this natural state is more and more perfected, prisms should be used of gradually diminishing power. (Mr. T. S. Wells, p. 335.)

MIDWIFERY AND DISEASES OF WOMEN.

Chlorosis.—In ordinary cases let one of the following pills be taken every other night: ℞. Hyd. chlorid. gr. xij; pil. aloes cum myrrhâ gr. xlviij; syrupi, q. s. Misce et divide in pil. xij. Two of the following pills should also be taken three times a day. ℞. Pil. ferri comp. ʒ iij; divide in pil. xxxvj. If diarrhœa be present leave off the aperient pill, and let the following be taken: ℞. Pil. ferri comp. ʒ iij.; pulv. opii gr. iv.; syrupi q. s. Misce et divide in pilulas xxxvj. quarum capiat duas ter die. If pills cannot be taken use the following:—℞. Mist. ferri comp. ℥ viij.; decoct. aloes comp. ℥ iv. Misce. Capiat ℥ iss. ter quotidie; and open the bowels by the following: ℞. Hyd. chloridi gr. j.; pulv. aloes socot. gr. iij.; pulv. cinnam. comp. gr. ij. Misce. Fiat pulvis noctibus alternis sumendus. (Dr. W. S. Oke, p. 378.)

Dysmenorrhœa.—Let two of the following pills be taken three times a day: ℞. Pilulæ ferri comp. ʒ ij.; extract. conii ʒ j. Divide in pilulas xl. (Dr. W. S. Oke, p. 379.)

Ergot, *Substitute for*.—Dr. Washington, of America, has discovered that dry cupping on the lowest part of the sacrum produces dilatation of the os uteri, and higher up contraction of the uterus. We may use one or other of these according to the nature of the case. But the lower one should always be on when the upper one is applied, so as to ensure relaxation of the os when the pains come on. (p. 360.)

Mammæ, *Galactagogue and Emmenagogue Effects of Warmth and Stimulants to.*—Dr. Cormack relates some interesting cases illustrating the effects of hot fomentations to the breasts. Warmth and stimulating applications often act powerfully as galactagogues, especially if the infant is periodically applied to the breast as well. If these should fail to produce a secretion of milk, a poultice made of two or three parts of bread to one of mustard, separated from the skin by a fold of soft linen, may be applied for half an hour, in the intervals maintaining great local warmth by means of abundance of cotton wadding. In a case where it seemed almost impossible to get rid of the milk and where abscesses threatened, all irritation about the breast, as well as the milk, completely disappeared in a few days by using a generous diet and removing all the stimulating applications which had been applied. (Dr. J. R. Cormack, p. 357.)

Menorrhagia.—It may be observed that opium is a valuable remedy in menorrhagia from its increasing the force of circular muscles. It is important to notice that henbane, hemlock, and belladonna relax these. (Dr. W. S. Oke, p. 380.)

Give ʒj. doses of the tincture of cinnamon every six hours, and continue it for fourteen days after the symptoms have disappeared. If the case has been an obstinate one continue the dose once daily for a month. (Dr. T. H. Tanner, p. 381).

Premature Labour.—There is a great and undoubted sympathy between the breasts and other parts of the sexual apparatus. It was supposed that irritation of the mammary nerves might induce uterine action. This was tried. Sucking pumps, made of caoutchouc, were applied for two hours seven times during three days; after the third application the cervix uteri was shortened, after the sixth severe labour pains came on, and after the seventh the child was born. (Dr. Scanzoni, p. 346.)

Prolapsus Uteri.—This operation is performed briefly as follows. A trivalve speculum having been introduced

into the vagina, so as to distend its walls, small self-closing curved forceps, by means of a holder, are attached to the partition of mucous membrane between the blades of the speculum, each portion receiving two or three, so that nine pairs of forceps may be applied in the whole. Each of these has a piece of string passed through the blades to aid, if necessary, their withdrawal. A pessary is then introduced and retained by a few folds of the T bandage. The patient is then put to bed. The forceps generally fall off from the fifth to the tenth day. The operation is to be repeated on other parts of the vaginal surface until its walls no longer project between the blades of the forceps. (M. Desgranges, p. 367).

In a case of long continued prolapsus, and in which the vagina was very lax and distensible, Mr. Marshall determined to apply the galvanic cautery to produce a series of eschars upon the walls of the vagina. A peculiar speculum made for the purpose, consisting of two large blades, and enclosing double rows of fenestræ about an inch in length and half an inch in breadth, having been introduced and the blades separated, the mucous membrane was seen to bulge through the apertures. The coil of heated wire was now applied, and eight eschars rapidly made on each side of the vagina. For the first fortnight the patient was confined to bed, and detergent injections used twice daily; as the sloughs separated, mildly stimulating ones were applied. The capacity of the vagina was considerably diminished, and on moving about no prolapsion was found to take place. It is important to observe that if the vagina is protruded, it must be first returned, as, although under these circumstances it may be easier to apply the cautery, yet it is most difficult and dangerous to return the mass afterwards. (p. 363).

Vesico-Vaginal Fistulæ.—Having exposed the opening by a proper speculum, Mr. Marshall applied the galvanic cautery, at a white heat, over the whole of the exposed

edge. The operation was repeated seven times, at intervals varying from three to eight weeks. The opening would originally have admitted three fingers, but after every operation the size gradually diminished, until at length the patient could fulfil her duties comfortably. (Mr. Marshall, p. 361).

Puerperal Convulsions. — The inhalation of twenty minims of chloroform produced almost a magical effect in a violent case of this alarming disease. (Mr. H. Rudge, p. 350).

Womb, *Fibrous Tumours of.*—Mr. Teale recently removed a large fibrous growth from the interior of the uterus. The tumour had protruded through the mouth of the womb and filled the vagina. It was so large that the fingers could not be passed above it to determine its mode of attachment. The treatment adopted in this case, which Mr. Teale also recommends in similar ones, is, to pull down the tumour beyond the external parts, if necessary, by midwifery forceps or other means, and partially or completely invert the womb. The operator can then ascertain whether the tumour be pedunculated or imbedded in the wall of the womb. Should the latter mode of attachment be found, he recommends the investing membrane of the tumour, a little below its attachment, to be carefully cut through in a transverse direction, by long curved probe-pointed scissors, to such an extent as to allow of the tips of two or three fingers to be insinuated between the investing membrane and the tumour, and the process of enucleation to be completed by detaching the upper part of the tumour from the wall of the uterus, after which the remaining attachment of the investing membrane may be divided by the scissors, and the tumour removed. If the uterus should remain inverted, it must be immediately replaced by gentle but firm pressure, which may generally be done without difficulty, as the os uteri has been so long subject to distension that it will offer but little resistance. (Mr. T. P. Teale, p. 383).

MISCELLANEA.

Asphyxia *from Chloroform.*—Artificial respiration, as recommended by M. Ricord, in cases where the fatal effects of this drug are manifesting themselves, cannot be too strongly insisted upon; but it must be well done, and steadily persevered in. In a case mentioned by Mr. Lowe, full eight minutes elapsed before the success of the treatment was made certain. (Mr. E. W. Lowe, p. 421).

In using artificial respiration in asphyxia from chloroform, it is very important to notice that the tongue should be drawn forward to ensure the free entrance of air to the lungs, as when the patient is laid on his back the tongue is particularly liable to fall back and close the orifice of the glottis. (Mr. E. R. Bickersteth, p. 417).

Disinfectant.—In Carlisle, on the suggestion of the Rev. Mr. Dew, of St. Cuthbert's church, great comfort has been found in introducing a few shovelfuls of soot as a deodorizer in the removal of night soil and manure. (Dr. Elliott, p. 440).

Finger, *to remove a Gold Ring from.*—First, polish the the outer surface of the ring by means of a strip of linen and prepared chalk, then apply quicksilver to the whole surface of the ring; in the course of a few minutes, by means of gentle pressure made upon the ring, it will break in pieces. The mercury amalgamates with the gold, crystallizing it, and rendering it brittle as glass. (Dr. Castle, p. 427).

Wind closely and tightly round the finger, as far as the ring, a piece of well-soaped twine; then, with the end of a needle or probe, force the end of the twine beneath the ring, and gradually unwind. The ring will come off with the twine. (Dr. Newnham, p. 427).

Whey.—Receipts for the preparations of the different kinds of whey, (which has long been employed as a curative agent in various ailments of a chronic character) will be found at p. 427.

ASIATIC CHOLERA.

Prevention.—During the prevalence of cholera, persons in connexion with cholera patients should carefully wash their hands before taking food. The soiled linen should be immediately immersed in water as soon as it is removed. The greatest care should be taken that the water for drinking be not contaminated by cesspools, drains, or sewers. If suspected, it should be boiled and filtered. The provisions should be well washed with clean water, and, if possible, exposed to a temperature of at least 212° F. When a case of cholera appears in crowded neighbourhoods the healthy should be immediately removed, except those absolutely necessary to wait upon the sick. (Dr. J. Snow, p. 399).

Calomel Treatment.—Give grain-doses of calomel repeatedly, with one or two drops of laudanum with each dose, up to 24 or 30 drops, when it may be discontinued. Dr. Ayre speaks with the greatest praise of this simple mode of treatment. He says, that as soon as the secretion of the liver is restored a favourable change takes place. It would seem to be very difficult to salivate a patient in this disease. (Dr. J. Ayre, p. 400).

In collapse pursue the following treatment. Give 15 grains of sulphate of zinc, and 15 grains of ipecacuanha, and repeat the emetic in ten minutes. In about twenty minutes place upon the tongue 20 or 30 grains of calomel, and repeat, from 2 to 10 grains or more, every ten, twenty, or thirty minutes, according to the severity of the symptoms. Give beef-tea injections every half hour to support the strength. Allay vomiting or thirst by ice or very cold water, in teaspoonful doses, ad libitum. Avoid giving stimulants. When the stools contain bile continue small doses of calomel for a short time, then give 20 grains of rhubarb and 30 of sulphate of potash, in peppermint water, or a castor oil draught. Afterwards reduce the fever by salines; and lastly, restore the strength by quina, ammonia, &c. (Mr. F. W. Richardson, p. 402).

Counter-irritation, Calomel, Astringents, &c.—The author says he has tested the following plan of treatment in nearly all parts of the world. Turpentine epithegms, or mustard poultices, to be applied to the abdomen frequently. Give ten grains each of calomel and prepared chalk, in treacle, every hour, along with half an ounce of the following mixture: Take of compound powder of chalk with opium, powdered acacia, and white sugar, each two drachms; sesquicarbonate of ammonia, one and a half drachm; cajeput oil, twenty minims; tincture of catechu, three drachms; with camphor mixture, eight ounces. When the stools become feculent, substitute the following until the purging stops: Take of acetate of lead, half a drachm; Battley's sedative solution of opium, fourteen minims to one drachm; oil of cinnamon, four minims; tincture of ginger, three drachms; and infusion of quassia, eight ounces. An ounce may be given every two hours. (Mr. C. A. Chavasse, p. 404).

Croton Oil.—Give one or two drops of croton oil on a small piece of sugar, and repeat it every two or three hours if the vomiting and purging continue. At the same time, apply hot bricks or bags of hot sand to the feet. The action of this remedy in this disease is not clear, but it certainly does not act as a purgative. (Dr. Hancox, '*Lancet*,' Oct. 8, 1853, p. 353).

Quinine.—Of all remedies hitherto tried as a palliative, with the exception perhaps of opium, there is none more deserving of further trial than quinine. (Ed. 'Med. Times and Gazette,' p. 409).

Sulphur.—In the ordinary diarrhœa preceding cholera give a quarter of the following mixture every two or three hours: Twenty grains each of precipitated sulphur and sesquicarbonate of soda, two drachms of tincture of lavender, and six ounces of water. Hot fluids and vegetables should be avoided. If the disease has advanced to vomiting, give the remedy every quarter of an hour until it stays upon the stomach. If diarrhœa has preceded the treatment by some days, give five or ten

minims of tincture of opium with each dose. (Mr. J. Grove, p. 405).

Sulphuric Acid.—Dr. Fuller sums up his experience as to the value of sulphuric acid as follows. In Asiatic cholera, given in ʒ ss. doses of the dilute acid, he says it exercises a most favourable influence. In bilious diarrhœa he believes it to have little or no effect, but in epidemic or autumnal diarrhœa, and in more decided choleraic diarrhœa he has never known it to fail. To render it a certain and effectual remedy the above dose should be given every twenty minutes. (Dr. H. W. Fuller, p. 405).

"Maxwell's Remedy."—Give one scruple of sesquicarbonate of soda with three grains of opium, in a bolus, washed down with another scruple of soda, in a wineglassful of water, *as hot as the patient can swallow it.* Repeat it in the evening, with two grains of opium if necessary, and afterwards give it in diminished doses. (Dr. Maxwell, p. 409).

Decoction of Catechu, &c.—When the cholera broke out in the 37th regiment, at Colombo, in Ceylon, in 1847, after trial of various systems of treatment, the most successful plan was found to be strong decoction of catechu administered both by the mouth, combined with laudanum, and by enemata (to the amount of two washhandbasinfuls) conjoined with laudanum, turpentine, ether, ammonia, &c., according to the circumstances of the case, and the condition of the patient. The intense pain in the epigastrium, and the vomiting, are best relieved by applying hot spirits of turpentine to the stomach, and iced drinks, especially champagne. Excess of stimulants is fraught with great danger. The inhalation of ether was tried, but with questionable success. In some cases, however, a remarkable restoration of cuticular warmth took place, and increased fulness and force of pulse. (Mr. A. J. J. Chitty, p. 411).

Saline Injections.—As the saline constituents of the blood in cholera are greatly diminished, keep ready for solution the following powder: Chloride of sodium, three

ounces; phosphate of soda, one ounce; carbonate of soda, one ounce and a half; sulphate of soda, half an ounce. This powder should be dissolved in water until the fluid has a specific gravity of 1030, and then heated to 98° F. It is then ready for injection into the blood. (Dr. G. O. Rees, p. 409).

Chloroform Inhalation—Mr. G. H. Heath strongly recommends the inhalation of chloroform to keep the stomach quiet until some powerful anti-emetic medicine has had time to affect the system, and relates a case in which it appeared to be very effective. (p. 412).

External Stimulants.—Mr. T. M. Greenhow recommends a plan of producing external stimulation, which, though not quite so formidable as the application of the actual cautery, and which he says is often resorted to in India, is yet a sufficiently formidable operation. It is a *brandy blister;* a linen rag dipped in brandy is applied to the abdomen and ignited, vesication may follow, though it does not invariably. If needful, repeat it; the part to which it is applied may be varied. (p. 413).

Cold Water Affusion, or Douche.—In India, in 1845, cholera was treated as follows. The patient was placed in a hip bath and water poured over him, while hospital attendants rubbed the limbs and trunk. This was continued until he shivered or felt chilly. He was then placed in bed and dry rubbed. If he relapsed, as they often do when the warmth of surface returns, the process was repeated. Generally the first operation was successful; it rarely needed beyond three or four repetitions. Little internal medicine is needed, except cold water. The beneficial effects of this douche plan are believed to arise from the stimulation given to the respiratory, and. secondarily, thereby to the circulatory functions. The author of this paper considers the premonitory diarrhœa to be neither part nor parcel of the disease. (Mr. E. M. Macpherson, p. 414).

PRACTICAL MEDICINE,

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

Art. 1.—ON THE RELATION BETWEEN THERAPEUTICS AND PATHOLOGY.

By Dr. George Johnson, Assistant Physician to King's College Hospital, &c.

[Dr. Johnson truly observes that on few subjects is there such diversity of opinion as upon the effects of remedies in disease, their modes of action, and the best methods of administering them. This, in a great measure, he believes to be owing to the carelessness manifested as to the natural history of the disease. If we had a specific for most diseases, as quinine for ague, the importance of diagnosis and scientific pathology would not be so great. They are the more important, however, since, as we do not possess many of this class of remedies, we are obliged to treat diseases on what are termed *general principles;* and it is improbable that for many diseases specific remedies will ever be found.]

There is, probably, no better test of the truth or soundness of any doctrine, when applied to practice, than the fact of its being consistent with the dictates of well-informed common-sense; and, perhaps, I could give no better illustration of the beneficial influence which has been exerted by this kind of appeal, than is to be afforded by the modified views now prevalent with regard to the nature and treatment of inflammation. It certainly does appear contrary to common sense to suppose, that a disease, whatever may be its name or its nature, which has been induced by exhausting and depressing influences,—by excessive labour, by loss of rest, by abstinence, by hemorrhage, or by some other drain upon the bodily strength,—that a disease so originating can be removed by a recourse to measures which have the same exhausting and depressing tendency,—by the free abstraction of blood, by a rigidly low diet, and by active purgatives. Science has listened to the voice of common sense in this matter, and, in spite of the dogma *similia similibus curantur*,—a method of practice which was originally suggested by imperfect and erroneous views respecting the nature of inflammation,—has been greatly modified, and with the happiest results. It is now becoming more and more apparent, that the *quantity* of blood in the vessels of an inflamed part is not the primary and most important fact

in the phenomena of inflammation. That the so-called increased afflux, or determination, of blood, is in reality produced by impeded flow of blood through the capillary vessels, resulting from an altered relation between the blood and the tissues with which it is brought into contact. This altered relation between the blood and particular tissues, may depend upon an excess of nutrient materials in the circulating fluid, or it may depend upon a directly opposite condition, or upon other changes in the *quality* of the blood. So that, however great may be the resemblance between the local phenomena of inflammation in different cases, the treatment must be conducted with a constant reference to the causes which have given rise to the disease.

The importance of ascertaining the remote originating cause of a disease is great in proportion to the degree of doubt which there may be as to the precise nature of the local changes upon which the symptoms in any given case are supposed to depend.

Perhaps I cannot better illustrate this remark than by a reference to those cases in which cerebral symptoms, and especially heaviness of the head and drowsiness, occurring in feeble and exhausted infants, might be erroneously supposed to indicate an inflammatory condition of the brain—cases of hydrocephaloid disease, as they have been called by Marshall Hall, who was, I believe, the first to publish an account of the affection in question. Dr. Gooch's valuable essay on this subject is so well known, that I scarcely need refer to it, except for the purpose of recommending it to the notice of any one who, perchance, may not have met with it. The mode of determining the true nature and the appropriate treatment of these cases, is to observe, not only the heaviness of the head and the drowsiness, but also the accompanying symptoms, and the previous history of the child. We are to take care, as Dr. Gooch advises, "that a drowsy child, who is languid, feeble, cool, or even cold, with a quick weak pulse, should not be treated by bleeding, starving, and purging, like a drowsy child who is strong, plethoric, has a flushed face, and a heated skin." When, in addition to the symptoms of exhaustion before mentioned, we learn, as we often shall on inquiry, that the child has been recently weaned, or that, from some cause or other its food has disagreed, that the bowels have been disordered and relaxed, or that the patient's strength has been reduced by active medicine or by leeching, little doubt will remain as to the nature of the case, and as little as to the necessity for nutritious food, for stimulants, and for tonics. I shall have frequent occasion to insist upon the importance of directing attention to the remote causes of disease, as a means of determining both its true pathology and its appropriate treatment.

I purpose now to illustrate the connexion between pathological science and rational therapeutics, by a consideration of hypertrophy of the heart.

It was formerly much more than at present the custom to speak, and even to write of hypertrophy of the heart, as if it were a disease *per se*, against which remedial measures were to be directed, without consideration of the cause of this structural change, or the possible consequences of injudicious attempts to remove it. We are not surprised to hear such language rom non-professional persons, who frequently speak of them-

selves, or of their friends, as having "enlargement of the heart," and who appear to consider that this is a sufficient account of the disease, and one which will enable a physician to give an opinion as to its probable consequences. We cannot, however, but experience a feeling of astonishment, when we find, as we sometimes do, that even those who appear to consider themselves competent to improve the treatment of these diseases, disregard the very elements of the question. Not long since, there appeared, in a medical journal, a paper, in which it was proposed to cure hypertrophy of the heart by the inhalation of medicated vapours. It was maintained, that this method of treatment afforded great hopes of success, inasmuch as the remedy would speedily be brought into direct contact with the part most frequently affected,—viz., the left ventricle. Now, the obvious defect in this paper, is the absence of any allusion to the various causes, and the pathological significance of hypertrophy of the left ventricle. There is no indication, that the author of the paper at all appreciates the great difficulty in the way of curing hypertrophy of the heart, without a previous removal of the cause which gave rise to it, or the fatal mischief which might ensue, if, by any means, such a result were attainable.

A consideration of the various causes which give rise to hypertrophy of the heart will suffice to show the unreasonableness of expecting to remedy, by any one method, a condition so diverse in its origin. I may state, *in limine*, that there is, probably, no exception—there is, certainly, no *proved* exception—to the rule, that hypertrophy of the walls of the heart results from continued or frequently repeated increased contractions of its muscular fibres. It consists in an increased growth of muscular tissue, and this results from the frequent and violent contractions of the heart, which are occasioned by a necessity for some additional effort to carry on the circulation. This growth of muscular tissue, in obedience to the demand for increased exertion, is one of the beautiful instances of those compensating and reparative processes with which the physiologist and pathologist are familiar. An illustration of the same beneficent law is seen in the firm and massy muscles of the blacksmith's arm, as compared with the flabby and undeveloped limbs of the tailor,—an instance, as we see, of supply being regulated by demand. Thus far, it appears, that hypertrophy of the muscular walls of the heart is a simple and easily intelligible phenomenon; but when we proceed to inquire into the various circumstances which may give rise to this demand for increased efforts on the part of the heart, and the consequent hypertrophy of its muscular tissues, we find that these causes are numerous and very diverse; and it becomes apparent that our success in the treatment of this condition must greatly depend upon our ability to detect and to remove its originating cause.

Among the most frequent causes of hypertrophy of the left ventricle are, first, a diseased condition of the aortic valves, or of the aorta itself; and, secondly, such a diseased or imperfect state of the mitral valve as will permit the blood to regurgitate into the auricle. The result of each of these conditions is, that the left ventricle has to perform more than its natural amount of work, and, in consequence, its muscular walls acquire an increase of thickness. Narrowing of the aortic orifice, or a

diseased condition of the arterial walls, exerts an obstructive influence upon the current of blood directly, while a diseased condition of the aortic or mitral valves, which permits of regurgitation, may cause an indirect, but equal impediment to the circulation, for the system demands a certain supply of blood in a given time; and as the blood which regurgitates either from the aorta into the ventricle, or from the ventricle into the auricle, in no way contributes to that supply, the amount of regurgitation, if it could be estimated, would be an index of the degree of extra ventricular contraction, either as regards force or frequency, or both, which is rendered necessary by this backward current. In each of the cases which I have mentioned, the hypertrophy of muscular tissue is a natural result of the increased demand for the muscular power which is required for overcoming an impediment to the onward passage of the blood.

In the cases to which I have now alluded, there is a very obvious mechanical cause, in the condition of the valves or of the arterial walls, for the impeded circulation, and the consequent hypertrophy of the left ventricle. But there is a numerous and important class of cases in which there exists a very marked degree of hypertrophy of the venticles without disease of the valves or of the aorta; in short, without any obvious cause of impediment to the circulation. This form of hypertrophy occurs, for the most part, in connexion with chronic diseases of the kidney; and it will, perhaps, be remembered, that in the "Gulstonian Lectures," which I had the honour to deliver last year, I entered at some length upon the consideration of this subject, and then suggested what appears to be the most reasonable explanation of hypertrophy of the left ventricle, when it occurs in connexion with chronic renal disease, and unassociated with disease of the valves or large arteries. The subject is one of much interest and importance, as well to those who are studying the connexion between morbid phenomena, as to those who are engaged in the treatment of disease. At present, I can only refer to such of the leading facts and arguments as will suffice to show in what way the question bears upon our present inquiry,—the relation, that is, of therapeutics to pathology.

The connexion between hypertrophy of the left ventricle and chronic disease of the kidney was first pointed out by Dr. Bright, whose observations upon this point are in strict accordance with those which have been since made by others. Dr. Bright found, that, in 52 out of 100 cases of renal disease, which were examined after death, there was hypertrophy of the heart. In 34 of these 52 cases of hypertrophy no valvular disease whatsoever could be detected, but, in 11 of these 34, there existed more or less disease in the coats of the aorta; and this disease may perhaps have impeded the circulation, and so have occasioned the hypertrophy; still, however, there remain 23 cases without disease either of the valves or of the arterial coats, without, as Dr. Bright remarks, "any probable organic cause for the marked hypertrophy generally affecting the left ventricle." Now, the most probable explanation of these cases is this, that the blood contains urea, and other excrementitious materials, which have accumulated there in consequence of degeneration of the secreting tissues of the kidney; that the blood thus

contaminated is impeded in its passage through the systemic capillaries, and that the hypertrophy of the left ventricle results from the increased efforts which are necessary in order to overcome this impediment. The chief facts which lend support to this explanation of the phenomena in question are briefly these :—It has been demonstrated, that at least one species of excrementitious material has precisely that effect upon the circulation which I have supposed to result from the accumulation in the blood of urinary excreta. Dr. Reid has shown that the exclusion of air from the lungs of a dog, and the consequent transmission of black blood into the arteries, has the immediate effect of causing great distension of the arteries, and an increased pressure upon their walls, while there is a corresponding diminished pressure upon the walls of the veins. It is evident, therefore, that this black, unaërated blood is impeded in its passage through either the minute arteries or the capillaries. The final result of the continued exclusion of atmospheric air from the lungs is a complete arrest of the blood in the pulmonic capillaries, as proved by the great engorgment as well of the lungs as of the right side of the heart and of the veins, and the comparative emptiness of the left cavities and the arteries.

It appears, therefore, that an excess of carbonic acid in the blood occasions an impeded circulation through the entire capillary system, and that the impediment increases until the blood is finally arrested in the capillaries of that organ whose office it is to eliminate the poisonous material. The very gradual process of asphyxia, which often results from emphysema of the lung and chronic bronchitis, exerts upon the right ventricle of the heart the kind of influence which a consideration of Dr. Reid's experiments would have led us to anticipate: the walls of that cavity usually acquire such an increase of thickness and of strength as is rendered necessary by the impeded condition of the pulmonary circulation. We have here, then, another cause and another form of hypertrophy of the heart.

Returning now to the hypertrophy of the left ventricle, which occurs in connexion with chronic renal disease; the reasons for believing that it results from an impeded flow of blood through the systemic capillaries, are briefly these :—1st. The absence of any other obvious cause of the phenomenon; and, 2ndly, the analogy with the consequences of asphyxia, —an analogy which is strengthened by the observation, that the condition of the renal blood-vessels is such as to indicate that these forms of diseased kidney which give rise to an accumulation of urinary excreta in the blood, are associated with an impeded circulation through the renal capillaries, which is strictly analogous to the state of the pulmonary circulation in cases of asphyxia. The minute branches of the renal arteries and the Malpighian capillaries in the cases of chronic disease of the kidney to which I now refer, usually have their walls hypertrophied and thickened in a way which can be explained only on the supposition, that there has been a long-continued impediment of the circulation through the intertubular capillaries.—*Med. Times and Gazette, July 2, 1853, p. 1.*

2.—ABSTRACT OF EIGHTEEN CASES OF TYPHUS FEVER TREATED BY THE FREE EXHIBITION OF BRANDY.

Under the care of Dr. Todd.

[In all these eighteen cases the type of the disease was of the well-marked typhus character—presenting the following symptoms previous to the commencement of the treatment.]

A copious eruption of scattered measle-like spots (mulberry or typhus rash;) bowels either confined or but slightly relaxed; great prostration of strength; delirium (in six cases, coma was present); a small and very rapid pulse. It may be well to premise, that they were treated as is done in almost all general hospitals in the open wards, their beds being purposely arranged so as to occur at some distance from each other, in order to prevent the accumulation of contagious emanations. The treatment pursued consisted in administering, either every hour or every half-hour, day and night, from half an ounce to an ounce of brandy, with a draught every second hour, containing sp. æth. chlorici ℥x., ammoniæ carbonatis gr. v., aq. pur. ℥j. The patients were induced to drink as much strong beef-tea as possible; the head was always shaved; and, in most, a blister was applied to the scalp. We are indebted to the careful observations, noted daily by Mr. Macnamara, the clinical assistant in charge of the cases, for the whole of the particulars respecting them. The first to which we shall allude was a very severe attack, and happened to an elderly and unfavourable subject; the beneficial effects of the alcoholic stimulant is strikingly shown, and there even appears some cause to infer the superiority of brandy over wine.

Elizabeth B., aged 70, was admitted June 16, 1853. She complained of severe headache, and of much pain in her limbs; was very deaf, and could see but very indistinctly. Her daughter stated, that the two latter symptoms had commenced four days previously, and the illness was of about a fortnight's duration, having begun with aching pains in the limbs and head, and great prostration of strength, followed, after four or five days, by several successive shivering fits. Pulse 122; tongue thickly furred.

℞. Tinct. opii ℥xx. h. s. sumend.

℞. Sp. am. arom. ℥xx., aq. pur. ℥iss. 4tis. horis sum.

18th.—The skin and chest of abdomen is covered with an eruption of measly spots. The patient has been delirious during the night; her tongue is dry and furred, pulse 124; the bowels have acted but once since admission. Pt.

19th.—Has been very delirious; pulse 126; other signs as before.

℞. Am. carbon. gr. v., sp. æth. chloric. ℥xv., aq. ℥iss. 3tis horis. Wine ℥viii. per diem.

21st—Much worse; lies in an almost comatose condition, and allows her urine and fæces to pass into the bed. Pulse 130. The head is to be shaved, and a blister applied. Instead of the wine, half an ounce of brandy is to be given every half-hour.

Rep. mist.

22nd.—Pulse 124. The half comatose condition still continues, and is only interrupted by low, muttering delirium.

23rd.—Pulse 120. The coma is passing off, and the delirium is less constant during its intermissions. The spots have now entirely disappeared from the skin. The patient takes her beef tea much better than she did.

24th.—Pulse 114. This morning the head symptoms are much less severe; and, on being questioned, the patient occasionally returns rational answers. The bowels act daily, but are not loose. To continue the same treatment.

25th.—Pulse 96. The skin for the first time is moist. The patient states, that she feels much better, and can be got to understand clearly where she is, which has not been the case on any previous occasion since her admission.

26th.—Pulse 90. To take half an ounce of brandy every two hours.

From the last date she continued to improve. To aid her convalescence, quinine and other tonics were administered. She was discharged quite well six weeks after admission.

In the next case the progressive decrease in the frequency of the pulse, subsequent to the employment of the stimulant, was equally well marked as in the above. It occurred in a much younger subject.

[One case out of the eighteen terminated fatally. In the seventeen remaining the following is the condition of the circulation, and the of the influence treatment upon it.]

On the day that the administration of brandy, etc., was commenced, the pulse had, in five cases, a frequency of 136 per minute; in three, of 126; in seven, of from 120 to 126; and in one, of 116. After the measures above specified had been pursued for four days, the pulse had, in eight cases, fallen to 92; in five others, it had fallen below 92 on the fifth day; and, in the remaining four, to below 90 on the sixth. Again, taking the day on which the treatment was commenced as our starting point, the skin, previously hot and dry, relaxed, and became moist and perspirable on the fifth day, in nine cases; on the sixth day in five cases; on the twelfth day, in one case; and in the remaining two the date of this crisis was not recorded.

The degree of success exhibited by the above facts is, we suspect, very considerably beyond that usually obtained in cases of so severe a type as those under consideration, and is very encouraging to a pursuance of a similar plan of treatment in future. That the success did really depend on the treatment, appeared to be conclusively evidenced in several cases, in which the pulse, progressively increased in frequency up to the time that the brandy was ordered, steadily fell from that day forwards. The relapses of one or two, in consequence of the accidentally inefficient administration of the remedy, also afford important support to the same conclusion. In respect to the numerical age of the fever at which the brandy treatment was commenced, it varied so much in the different cases, that there does not appear to be any practical advantage in attempting to state it. In all, however, the first stage had passed, and low "typhus" had become fully developed.—*Med. Times and Gazette, Aug.* 27, 1853, *p.* 217.

3.—QUININE IN FEVER.

By Dr. Robert Gee, and William Eddowes, Esq., Medical Officers of the Liverpool Fever Hospital.

[Cinchona bark has been used in continued fever since the period of its introduction into England. Sydenham did not use it in continued fever, but Morton, his contemporary, gave it boldly, ʒj. every three or four hours, with great success.]

Dr. Sims expressed himself thus:—"I solemnly declare that I never saw a case of nervous, low, putrid, or malignant fever, when the patient could be brought to take this medicine in sufficient quantity, turn out unfortunately." He did not rely on less than six or seven ounces given in little more than two days. Drs. Fordyce, Armstrong, and others, were of an opposite opinion.

[Our readers are aware, that under the form of sulphate of quinine, Dr. Dundas has recently introduced it into this country as a remedy for the ordinary forms of continued fever. The character of the disease is the ordinary one, presenting no peculiarities.]

The most frequent complication was subacute bronchitis; a few cases of pneumonia and a few of pleurisy occurred. Bowel complication of a serious nature was extremely rare.

Before administering the quinine it is well that the patient should have an emetic, for of itself it is beneficial, and after its operation the quinine rarely disagrees with the stomach. It may be given at all stages of the disease, unless there be great prostration. The dose of the quinine is from three to ten grains every two or three hours, given in the form of powder. From the commencement the patient is allowed three pints of milk and one of beef-tea daily, and, if at a late stage of the disease, or the patient has been a drunkard, wine or whisky is given. Purgatives do not appear to be necessary, for the emetic usually relieves the intestines as well as the stomach; and if constipation should occur, a simple enema is generally sufficient to remove it.

In those cases where the quinine treatment was commenced during the first seven days of the fever, the average duration of the disease was 4·4 days after the first administration of the remedy; when during the second week, 5·8 days. From cases treated during or after the third week no inference can be drawn, the disease having then nearly run its course.

We subjoin a few cases for the sake of illustration. The cases in which the quinine was given appeared to be distinctly *idiopathic* fever; whether it will exert a beneficial influence in symptomatic fever is quite a distinct question which we are not in a position to answer.

Edward C——, aged twenty-two, bricklayer's labourer, apparently a strong man, admitted March 19, 1852; was living in a street near the docks. Five days ago, while at work, he was attacked with the ordinary symptoms of fever, which increased till his admission. At present, March 20th, he has a hot skin; great thirst; no sleep for some nights; pulse 104, full, but not strong; headache not severe; tongue with a

thick yellow fur at base; bowels open. Over the surface generally, but more particularly over the abdomen and thorax, are numerous reddish, purple spots, about the size of the head of a large pin, totally unaffected by pressure, To have directly a scruple of ipecacuanha powder, a grain of emetic tartar, followed by the sulphate of quinine in powder, five grains, every two hours. Ten grains of Dover's powder to be taken at bed-time, to procure sleep. Diet to consist of milk, arrow-root, or beef-tea, according to choice.

March 21st.—Feels better; slept well; tongue much cleaner; pulse 72, soft; skin cool and moist; countenance natural; no thirst; no head-ache. Appetite not very good, but he takes his milk and some arrow-root. To take the quinine three times a day.

22nd.—Feels much better; tongue slightly furred; skin bathed in perspiration; rash fading, of a brick-dust colour. Omit the quinine. To take a mixture of quassia and ammonia.

25th.—Rash gone; tongue still a little furred; does not feel ill in any way. Was discharged on the 29th.

Example of treatment begun during the second week of the disease:—Mary C.——, aged sixteen; admitted May 8, 1852; has been ill thirteen days. (Her mother was admitted at the same time, and died under the saline treatment.)

May 9th.—Lying on her back, breathing quickly; great delirium, trying to get out of bed; extremely thirsty; tongue dry, but not furred; pulse 132, weak; "great pains everywhere, but more particularly in her legs;" skin covered with a purplish, red, measly eruption, of a pungent heat. To have an emetic, followed by six grains of sulphate of quinine, and one-sixth of a grain of opium, every two hours. Milk, arrow-root, or beef-tea, according to choice, and four ounces of wine daily.

10th.—Slept more comfortably, did not get out of bed at all; says that she feels a great deal better; pulse 110; tongue still dry; skin extremely hot; was relaxed after the emetic yesterday, the motions being passed in the bed. Continue.

11th.—Countenance improved; no delirium; slept fairly; tongue not so very dry as before; says she is better; is deaf; pulse 112; skin still hot; great thirst. Continue.

12th.—Slept fairly; breathes comfortably; has passed one or two motions in bed; pulse 88; skin moist, and heat greatly diminished; tongue moist, but coated with a light yellow fur; says that she feels still better. To take one powder every three hours.

13th.—Rash fading; sleeps fairly; bowels rather loose; and some abdominal tenderness. To have an injection of starch, with twenty drops of laudanum, given three times in the day. Continue.

14th.—Countenance natural; tongue clean, pulse 84; slept well; appears to be quite free from fever. Omit the quinine, and take a mixture of ammonia and quassia. A chop daily. Was discharged on the 26th of the same month.

Thomas D——, aged eighteen; a groom; had good general health; admitted Dec. 9, 1851. Three weeks ago did not feel well and was in bed a few days, then felt better, and went to his work for a week. Was

again laid up, the attack commencing with rigors and headache. Has been ill with the last attack nine days; delirium four days; slept a little, but never soundly; bowels open. Previous to admission had taken nothing but slops, with the exception of yesterday, when he had a very small allowance of beef-tea for the first time, and a glass of wine, to-day, before his removal to the hospital.

Two hours after admission.—Lying on his back; lips separated; pupils dilated, though in a strong light; motion passed in bed; occasional involuntary movement of the hands; great delirium; takes no notice of questions addressed to him; will not or cannot protrude his tongue; jaw fixed; is breathing easily; pulse 100, soft; lips dry, sordes; skin moist, with perspiration. To have an emetic, followed by the quinine, ten grains every two hours; milk, arrowroot, or beef-tea.

10th.—Ten o'clock: Has taken five doses; slept from five to six o'clock this morning; can protrude his tongue, which is brown and somewhat dry; can answer questions; a little deaf; has taken a little arrowroot and milk; has passed no urine since admission. To have three ounces of brandy in the course of the day. Seven P.M.: Slept a little in the course of the day; has passed no urine; a catheter was passed, and about four drachms of turbid urine came away; has had one involuntary motion; is lying on his back, moaning frequently, and when asked where he has any pain, replies that he does not know; pulse 96; has taken about half a pint of beef-tea. To have hot water to the feet, and mustard poultices to the loins; half a grain of the acetate of morphia.

11th.—Greatly improved; passed an abundance of water in the night and this morning; tongue moist, with a thin, white fur; slept very well; answers questions more promptly, and says he feels a deal better. Continue the quinine.

12th.—Slept well; is in a profuse perspiration; is free from pain; enjoys his food; no delirium; pulse 88, soft; still somewhat deaf. To have the morphia at bed-time, and to take the quinine every four, instead of every two hours.

13th.—Slept well; does not "feel anything the matter" with him; abundant perspiration; motions natural; good appetite; tongue quite clean. To take five grains of quinine three times a day. Continued to improve, and went into the country on the 19th.

This man was living in a gentleman's house till admission.

Daniel H——, middle aged, colouring man; admitted Dec. 7th, 1852; has been ill fourteen days; is in a state of great debility; exceedingly restless and delirious; eye wild, but not injected; subsultus tendinum; tremor of hands; great thirst; pulse weak; tongue furred at base, moist; skin hot, but not dry; covered thickly over abdomen and thorax with purplish red spots, from a pin's point to a large pin's head, slightly raised and unaffected by pressure; is deaf. To take ten grains of quinine every two hours, and have six ounces of brandy in the twenty-four hours; milk, arrowroot, or beef-tea.

Dec. 8th.—About the same. Took the powders during the day time, but not by night. Had some sleep; is very deaf; still restless; still subsultus and tremor of the hands; thirst less; skin not so hot; bowels

opened once; pulse 80, stronger. Coutinue the quina and brandy; half a grain of acetate of morphia at bed-time.

9th.—Passed a comfortable night; restlessness gone; countenance improved, becoming more natural; still subsultus; skin moist, and not above the natural temperature; still deaf; pulse 80; enjoys his milk and beef-tea; rash becoming more of a purple tint; tongue dry in the centre. Continue the morphia at night, also the brandy and the quinine every four hours.

10th.—Slept well; still some subsultus; countenance much improved; pulse 80; skin moist; delirium gone; tongue as before. Continue quinine, brandy, and morphia.

11th.—Is quiet and comfortable. Continue the quinine and brandy; omit the morphia.

12th.—Sleeps night and day; has no pain except that he feels sore from lying; has tinnitus aurium; pulse 80, skin cool and moist; takes all his milk and beef-tea, but cannot eat bread; tongue still somewhat dry in the centre. Omit the quinine, and take a mixture of ammonia and quassia three times a day.

13th.—Tongue moist, slightly furred; sleeps well; feels better.

16th.—Rash; which had been gradually fading, has entirely disappeared. Convalescent.

Of sixty-one uncomplicated cases, eleven were under treatment during the first seven days: of these, two were free from fever on the second day after treatment; one on the third day; two on the fourth day; three on the fifth day; one on the sixth day; one on the seventh day; one on the eleventh day. In twenty-four, the treatment was commenced during the second week: of these, one was free from fever on the second day after treatment; two on the third day; five on the fourth day; seven on the fifth day; three on the sixth day; two on the seventh day; one on the eighth day; two on the ninth day; one on the twelfth day. In twenty-six, the length of time that the fever had previously existed was not ascertained: of these, five were free from fever on the second day after treatment; six on the third day; three on the fourth day; four on the fifth day; three on the seventh day; one on the eighth day; three on the ninth day; one on the twelfth day.

The quinine was also given in twenty-seven complicated cases, the chest being involved in twenty-two, the abdomen in two, and in three both the abdomen and chest were affected. Of the twenty-two cases where the chest was involved (the affection being, as before remarked, generally subacute bronchitis), fifteen were treated during the first week: of these one was free from fever on the third day after treatment; one on the fourth day; two on the fifth day; four on the sixth day; two on the eighth day; one on the ninth day; two on the tenth day; one on the eleventh day; and one on the twelfth day. In seven the treatment was commenced during the second week: of these two were free from fever on the third day; two on the fourth day; one on the sixth day; one on the seventh day; one on the tenth day.

The remedy employed in the above complication, in conjunction with the quinine, was a large mustard jacket placed round the whole of the chest both back and front, applied twice or thrice daily, and left on as

long as the patient could bear it. It possesses the advantage of not weakening the patient, at the same time being an excellent counter-irritant. Great care should be taken, more particularly in winter, to prevent the patient taking fresh cold while at the night chair; in hospitals we think the use of the bed-pan the best preventive.

Two cases occurred with abdominal complication: of these one was admitted on the ninth day of the fever, and recovered on the sixth of treatment; the other was admitted on the fifth day of fever, and recovered on the seventh day of treatment.

Three cases occurred with abdominal and chest affections: of these, two were admitted on the fifth day of the disease, and were free from fever on the fifth day of treatment; one admitted on the eighth day of the fever was free from it on the tenth.

Thirteen cases in which the quinine was given proved fatal: of these five died within forty-eight hours after admission. Of the remaining eight, one was admitted on the eighth day of fever, and died on the eighth of treatment. One was admitted on the fifth day of fever, and died on the sixth of treatment: this man had persistent hiccough, congestion of lungs, and had had a severe attack of fever seven months before. One was admitted on the seventh day of fever, and died on the tenth of treatment: this patient had been allowed nothing but barley-water previous to admission; tubercles in the right lung. One was admitted on the fourteenth day of fever, and died on the fifth of treatment: the quinine seemed to produce no effects. One was admitted on the ninth day of fever, and died on the sixth of treatment: this patient had two kinds of spots, the one disappearing, the other unaffected, by pressure; had been a hard drinker. One was admitted on the fifth day of fever, and died on the eighth of treatment: a woman seventy-six years old; this was the only fatal case where the pulse was reduced below 100. One was admitted on the fourteenth day of fever, and died on the fourth of treatment; the quinine did no good. One was admitted on the eighth day of fever, and died on the third of treatment: had involuntary motions when admitted.

The effects of the quinine on the pulse is, in favourable cases, sometimes very remarkable: in one case it fell from 104 to 72 in twenty-four hours; in another from 140 to 84 in seventy-six hours; but generally speaking the reduction is gradual and steady. In cases which terminated fatally the quinine, with one exception, never reduced the pulse below 100; it sometimes fell from 148 to 124, from 112 to 108, from 140 to 114, but not below 100. None of the fatal cases were under treatment before the fifth day. In complicated cases the effect on the pulse is less marked than in those which are free from complication. —*Lancet, July* 2, 1853, *p* 3.

4.—CLINICAL REMARKS ON YELLOW FEVER.

By Dr. W. J. Cummins, Surgeon R.M.S. "*Medway.*"

[Dr. Cummins observes that the small doses of quinine, recommended in our Pharmacopœias, have no effect in yellow fever, and that many cases are lost from the dread of pushing the remedy to the necessary extent.]

Most persons believe that when deafness is produced there is no further indication for its use; but this is a fatal error, as in most cases it is necessary to push it for a much longer period. It is difficult to lay down any fixed rules as to the quantity that should be given in any individual case; but if a well-founded and long-established rule of medicine is borne in mind, that in certain diseases ten times or more of the ordinary dose of a medicine is required to produce its effect, and that yellow fever is one of those diseases, it will be found that the best guide for the administration of quinine is the *amount of nervous depression present.*

Another general rule of medical science must also regulate the administration of this medicine—that depression follows the excitement of all stimuli. Now it is certain that quinine acts as a stimulus to the nervous system, and that its action as such is temporary, and invariably followed by depression. Now as long as the yellow-fever poison is in the system, anything which promotes depression of nervous action must increase the disease; it is therefore obvious that the primary or stimulant action of this medicine must be kept up by continuing its administration until the poison has passed off the nervous system, which it is certain to do in the third stage; for, as I have mentioned, it has its limit of operation like other poisons, and wears itself out in three or four days, leaving only its effects behind. It is true that the more quinine given, the greater will be the depression when its use is discontinued; but if this occurs after the poison passes away, it will be a depression *sui generis,* and not an aggravation of the specific depression induced by the poison. I do not mean for a moment to make light of the depression which follows the use of large quantities of quinine; on the contrary, I consider it as the probable source of the tedious convalescence which *occasionally* is observed after yellow-fever, and which renders removal from the tropics necessary. But I would say that by comparison with the specific depression of yellow fever it becomes trivial. We have a choice of two evils before us, either by pushing quinine to its full extent, to increase the depression of convalescence, which can be cured by change of climate, &c., or to increase the specific depression of the poison, by allowing the quinine depression to exist along with it; and who that knows the awfully destructive nature of the yellow fever depression would hesitate in choosing the first? It may be supposed from my remarks upon the duration of the poison that I consider it a disease which, when once established, must go on for a certain number of days, but this is far from being my opinion; for I have frequently seen a most violent attack cut short by thirty or forty grains of quinine administered *early,* and perhaps repeated in an hour. Now, the possibility of such an occurrence as this seems to contradict my remarks upon the danger of leaving off quinine too early; but there is a vast difference between cutting short a disease and only suspending its action, and the danger of the after depression of quinine is not to be apprehended in the former. If a patient is seen *very early,* and we determine upon attempting to cut short the disease, it is better to give thirty grains of quinine and twenty grains of calomel immediately, and another similar dose conjoined with five grains of James's powder an

hour afterwards. This should be followed in two hours by an ounce and a half of castor oil. It is extremely probable diaphoresis will then be established, the pain in the head and back will have subsided, the congestion have been removed, the bowels well opened, and all the functions perfectly restored to health. This is cutting short the disease, and we need not fear the depression which follows the quinine in such a case; but it is no easy matter to determine exactly whether the disease is stopped or suspended; and we must watch the case closely for at least twenty-four hours, and if the symptoms are not completely removed, we have lost time, and injured our patient by permitting the secondary effect of the quinine to become established, so that an attempt to cut short the disease is not without a certain degree of risk; at the same time, if tried *early,* it very frequently succeeds. It must therefore remain a question for the physician to decide whether the symptoms are sufficiently recent to admit of their cause being rooted out of the system, and my own experience limits the attempt to five or six hours. We must not allow an idiosyncrasy to interfere with the full use of quinine.

I was called some time since to attend a gentleman who had contracted bilious remittent fever at Chagres. He told me that during some slight illness at New York he had taken a few grains of quinine, which almost drove him mad, producing most violent nervous symptoms and palpitation of the heart. Here was an idiosyncrasy that under ordinary circumstances would have completely contra-indicated the use of the medicine; but the following train of reasoning induced me to give it a trial:—

Quinine causes increased nervous action, and this gentleman, when in New York, was violently affected by a very small quantity. It follows that his nervous system must have been more than ordinarily excited, even before he took the medicine; this was the idiosyncracy.

But now, on the contrary, he is suffering from a disease of diminished nervous action; and provided the medicine is so regulated as only to bring nervous action to the natural standard, there is no reason to dread a recurrence of the violent symptoms he suffered from in New York. I gave it in large doses; he completely recovered, and probably owes his life to the quinine, which did not cause a single unpleasant symptom. This is a most instructive case, as it throws some light upon the nature of an idiosyncrasy. The great bulk and very bitter taste of quinine renders its toleration in large doses by an irritable stomach a matter of extreme difficulty; indeed, before I found out my present mode of giving it, I used to consider it a matter of impossibility to have the requisite quantity retained.

It is necessary to combine it with calomel, sometimes with James's powder, for reasons which I shall mention by and by, when I come to the treatment of the secondary effects of the poison. These powders should be mixed with a sufficient quantity of water to form a soft pill, then a dessert-spoon must be lined with a thin layer of jelly, so as to form a bolus which can be gulped down without taste. These particulars may be considered unworthy the attention of a medical man, but those who have treated as many cases of yellow fever as I have will see their value.

If vomited even when administered in this way, as it sometimes is,

a large mustard plaster must be applied to the epigastrium, and another dose given. This must be repeated, if necessary, again and again, and I have always succeeded by perseverance; but, occasionally, it is well to give a drachm of sulphuric ether, and eight or ten drops of creasote, to allay any spasm that may be present, and pause an hour before again trying the quinine.

The diagnosis of yellow fever among the better classes, even at its commencement, (provided an epidemic is present,) is easy, but on board ship, especially in the West Indies, where rum can be had for almost nothing, and cannot be kept from sailors, it is nearly impossible to distinguish between the morning effects of a night's debauch and the fever, more especially as the depression following drunkenness often lends vigour to the poison lying dormant in the system. The best way is to treat all cases which exhibit symptoms of congestion (no matter what may have been its cause) as I have recommended for cutting short yellow fever, and generally a few hours will decide whether it is the drunkenness of that disease, or of rum; and sixty or seventy grains of quinine will do the latter no harm, and the calomel still less, for it rarely salivates in large doses followed by castor oil. But, if our patient is one we know to be a steady character, and that the symptoms are sufficiently decided to admit of an immediate diagnosis, our first care must be to remove him from the pestilential locality in which he became poisoned, in order to prevent its continued operation upon his system, for it is sufficiently obvious that the depression already existing, disposes the system to the reception of a further supply of the poison, and that medical skill has not a fair chance without removal from its influence.

Except under peculiar circumstances, it must be presumed that the sleeping-place is the spot where the poison has been received, because during sleep all the functions of the body are carried on with diminished vigour, and the whole system thus exposed to the injurious action of external agents. We therefore recommend immediate removal from the house or cabin of residence, and a change to the highest and best-ventilated spot practicable. It is very rare for a medical man to have an opportunity of seeing a case of fever until six or eight hours from its commencement, except on board ship, and even then not very frequently; so that in speaking of the treatment by quinine I shall suppose the disease to have gone on unchecked for that period. The first stage will probably have gone on unchecked for that period. The first stage will probably then have terminated, and that of reaction become established; but no matter, whether in the first or second stage, there is sure to be present an indication for quinine, and we must commence its use immediately.

I give twenty grains every second hour until four doses have been taken, when, if deafness has commenced, which it probably has by this time, I pause until it begins to subside, which it usually does in about four hours. I then give ten grains of quinine every second hour, and continue it according to the indication given by headache, pain in the back, congestion, and muscular prostration, as well as the state of the secretions; but I never trust much to an improvement in the pulse or tongue. This is the routine treatment I generally adopt to fulfil the

primary and most important indication; but the patient must be watched closely, as the dose has often to be increased or diminished.

It is sometimes necessary to use quinine late in the disease, a fact with which I was unacquainted until the other day during the present epidemic on board the *Medway*. One of the officers was attacked very severely, but recovered almost entirely in a few days, and was able to walk about the main deck. Unfortunately at this time we had to coal at St Thomas'. Two ships were sent alongside for that purpose, and completely shut out the ventilation from the ports forward ; at the same time it rained incessantly, making it necessary to put on the hatches. I never felt anything equal to the heat, closeness, and dampness of the atmosphere, or the noise and smell of the negroes ; it was certainly enough to induce disease. The day after, my patient was attacked, with nervous depression, congestion, suppression of the secretions, hemorrhage, black vomit, &c., and died without any attempt at reaction. I think life might have been saved by a return to the large doses of quinine, and I shall certainly prescribe it in another case of the sort. His convalescence may have been a remission, or rather intermission; but if so it was the first time I have observed either. During convalescence I always give three grains of quinine, three times a day, in wine, with a view to preventing the secondary action of the large doses becoming established too suddenly. It seems to ease off the overexcited nervous system "handsomely," as sailors say, and besides restores the appetite.

I shall conclude this paper by saying that I have lately used quinine as a prophylactic with much success. Indeed I now make a point of giving it to all who have recently arrived from Europe, especially midshipmen who have never been in the Tropics before. I use it in the doses recommended by my friend Dr. Cambell, of Kingston, Jamaica—three grains twice a day, taken as bitters.—*Lancet, July* 23, 1853, *p.* 75.

5.—PRACTICAL OBSERVATIONS ON YELLOW FEVER, AND ITS TREATMENT WITH SPIRITS OF TURPENTINE.

By James Laird, Esq., Edinburgh.

[To Dr. Gilbert King is due the credit of having first used this remedy in bilious remittent fever. Mr. Laird is of opinion that this disease is not of an inflammatory diathesis but a blood poison from external influences —the organic lesions being secondary. Hemorrhages from the nose, mouth, and bowels, of a passive character, proved that the blood was in a dissolved and deteriorated condition.]

It appears natural to conclude that the blood, after its primary impregnation, or rather at the commencement of the attack becomes afterwards further contaminated by the non-elimination of the different excretions, as is known to take place in certain forms of jaundice, in milk fever, and disease of the kidneys.

With this view therefore, in regard to the pathology of yellow fever, and there is good reason to believe also of cholera, supported as it is

by the analogy of the action of certain poisons on the system, I will now endeavour to prove the consistency and reasonableness of the turpentine mode of cure. During the epidemic, it was first prescribed by Dr. King, in five very bad cases of this disease, with the view solely, I believe, of restraining passive hemorrhage, when its peculiar salutary influence was so strikingly observed. This happened on the 27th of August, about a month after the fever had broken out; a revulsive plan of treatment, including general and local bleeding, to a large extent, having up to this period been practised with very unsatisfactory results. After these experiments on the five cases alluded to, all of whom remarkably recovered, (and two were reported as having had black vomit,) the turpentine was afterwards given in every case and in every stage of the disease, with what success documents then sent into office will show. When I joined the hospital on the 19th of September, the epidemic may be said to have been at its height, and there were then 103 cases of fever under treatment. The general mode pursued was a moderate bleeding at the commencement, (from 12 to 20 ounces,) followed by cupping or leeching, if it seemed necessary.

If the patient had received no medicine prior to admission, the prima viæ were cleared out by a purgative dose of calomel or blue pill, along with solution of Epsom salts, and the turpentine then given in doses of twenty minims in a little camphorated water three times a day. In consequence of strangury, it was occasionally administered in combination with sweet spirits of nitre; but this troublesome symptom was happily of but rare occurrence, and then generally consequent on the the application of blisters. Small doses of tincture of opium, and also castor oil, were occasionally combined with it, in cases attended with frequent bloody and otherwise vitiated dejections, or in an opposite state of the bowels. The auxiliary treatment comprised sinapisms and blisters to the epigastrium, emollient enemata, and during the stage of debility, wine negus, beef-tea, &c., and cinchona injections. The principal remedy being therefore the turpentine, since in the generality of the cases nothing else was given, I consider it, without any prejudice whatever, as a remedy in bilious remittent fever, not only perfectly consistent with, but particularly indicated by, the symptoms during life, and also the appearances after death, for the following reasons:—First, the hemorrhagic character of the disease, depending doubtless on some change either in the chemical or vital properties of the circulating fluid; secondly, from the speedy embarrassment of the different excretory functions, particularly that of the kidneys, a diminished or suppressed excretion of urine having been particularly observed here as the most unfavourable symptom, and proved by the frequently contracted and empty condition of the bladder in fatal cases. As regards the first proposition, since this medicine is universally acknowledged as producing certain styptic and other salutary effects, melæna and ordinary passive hemorrhage, is it not reasonable to infer that it will be equally effectual in fevers, not recognizing inflammation as their proximate cause and attended with a somewhat similar pathological condition? In regard to the second proposition, its well-known physiological influence on the renal and cutaneous vessels prove it to be, as a diuretic and su-

dorifie, the very remedy which nature points out, in the means she herself adopts in the spontaneous cure of malignant fever. Besides these long and well known properties and also its acknowledged action on the nervous system, I believe that turpentine possesses antiseptic or antiscorbutic qualities, as I have in several instances observed in scurvy, and particularly in scorbutic ulcers of the leg, indicated by their florid, healthy appearance, after a few doses of this medicine. That it is not in the doses above-mentioned a stimulant, but, on the contrary, an indirect sedative, and therefore not counter-indicated in the first stage of yellow fever, our experience here most satisfactorily proved in hundreds of cases, as it has also since done in the treatment of dysentery. Unprejudiced as I hope I am, and being anxious to bring this really valuable remedy more into notice by an honest appeal to plain ascertained facts, I beg respectfully to state in the most earnest and unqualified manner, that instead of exciting the circulation, it quieted it, and allayed the urgency of the primary pyrexia by quickly (and in some cases almost immediately) restoring the pent-up secretions. The moderate bleeding, which was generally practised at the commencement, and frequently found essentially necessary to divert local determinations, no doubt materially assisted it in its action on the skin and kidneys, and on this account must be considered as a very important step in this mode of treatment.

Turpentine is, therefore, a mere simple, innocuous remedy, which besides its sedative, styptic, and antiseptic properties, possesses also the peculiar power, in its action on the secretions and excretions generally, of re-establishing and keeping open the two great natural drains of the system—viz., those by the skin and kidneys, the functions of which, we all know, are amongst the first to be impaired or impeded on an attack of fever. That it claims attention from its having the advantage over specific medicines in this disease, such as quinine, calomel and quinine, and biberine, (mercury being now considered not a specific, of which we have numerous proofs,) is sufficiently obvious, from the nature of its action being readily explained, and from its use being equally beneficial in the last as in the first stage of the disease; I mean, when black vomit, bloody dejections, and low delirium have set in; and as a testimony to its good effects, we had several recoveries from black vomit, attributable entirely to its influence.

Viewing, therefore, the pathology of yellow fever, as being primarily connected with a morbid alteration of the blood, and admitting the analogy between its phenomena and the action of a septic poison on the system, borne out, as their identity is, by the rapidity of the morbid action, the salutary efforts of nature, and the speedy convalescence,—what better remedy, I beg respectfully to ask, do you require than this, which, like ammunition in a beseiged citadel, supplies the means of defence, till the poison, like the enemy, is worn out and overcome?

In conclusion, I have to observe that during the last winter I had an opportunity of trying this remedy in a very severe case of *typhus* fever, as did also a friend here in eight other cases, with excellent effect, given in the following formula: Spirit of turpentine, spirit of nitric ether, of each three drachms; compound tincture of lavender, two

drachms; camphor mixture, four drachms. Of this mixture (well shaken up) a tea-spoonful was given in a wine-glassful of water every four hours. I was led to prescribe the turpentine in this form to save the patient I attended, who was very poor, the expense of a larger mixture, and combined it with the nitric ether, to guard against strangury, which I was afraid would be easily excited in this climate. The other ingredients appear to answer tolerably well in disguising the turpentine taste and smell; but the inoderated is much preferable to the common turpentine. In all these cases its beneficial effects were equally well marked as in the continued and remitting fevers of Bermuda; and I have no doubt, should any of your readers feel disposed to try this mode of treatment in the typhoid fevers of this country, with an unprejudiced mind and observant eye, the result will prove the truth of these remarks.—*Lancet, Aug.* 27, 1853, *p.* 183.

6.—ON PYOGENIC FEVER.

By Dr. William Jenner.

[This disease might be termed acute purulent diathesis; but the name Dr. Jenner has given it is a more simple one.]

Immediately after the termination of the acute specific diseases, it is by no means uncommon for one or two small abscesses to form in the subcutaneous cellular tissue. A frequent seat of these collections of purulent-looking fluid is the subcutaneous cellular tissue of the scalp. More or less febrile disturbance may precede or accompany their development. Although more common, perhaps, in the situation referred to than elsewhere, they are by no means limited to it. Sometimes, instead of two or three, the number of these collections of purulent-looking fluid is considerable. If small, their contents may be absorbed; but this rarely happens if their size exceeds that of a walnut.

The signs of inflammation that precede the formation of the pus are usually of the most trivial kind, the patient's knowledge of the existence of the local ailment being first derived from the presence of the swelling; the physician at the same time observes fluctuation. Sometimes, however, the signs of inflammation are more manifest, and, while pus is formed more or less rapidly at some spots, at others the inflammatory signs disappear, and neither before nor after their disappearance is any evidence of the presence of pus to be detected. The local lesion is limited to the first stage.

These disseminated abscesses in the subcutaneous tissue after or during the progress of the acute specific diseases, are allowed pretty generally to have their origin in a diseased condition of the blood; only, by some they are held to be critical, the evacuants of peccant matter: while by others they are regarded merely as local inflammations, excited by a diseased condition of the blood,—a diseased condition which gives to the local inflammation it excites a tendency to terminate in the exudation of a blastema susceptible only of evolution into an albuminous fluid and cells of low organisation. The exudation of a blastema possessing the

same properties in so many places at the same time, is held to indicate the existence of a definitely diseased condition of the fluid from which that blastema is formed, just as the deposit of many masses of cancer blastema in the same body at the same time, is held to indicate the existence of a definite disease of the blood in the person who is the seat of them. The idea that these subcutaneous collections of purulent-looking fluid of small size, and the formation of which is attended with little constitutional disturbance, are due to any foreign solid matter, be it pus globules or any other, circulating in the blood, has never, so far as I know, been advanced: it would be too untenable to be entertained for an instant. But, instead of being attended by little constitutional disturbance, as in the cases to which I have just referred, we now and then find that great constitutional derangement precedes and accompanies the establishment of the suppurative action,—that, instead of being situated in the cellular tissue immediately under the skin, the collections of purulent-looking fluid are formed in cellular tissue more deeply seated. Again, in other cases, we find that they are not limited to the cellular tissue, but that the pus blastema is exuded into the joints; and yet further, that it is in rare cases disseminated, in masses through the viscera of the chest and abdomen. Now, the transition from the first to the last described state is by most insensible gradations; the circumstances under which all occur are the same; and, if it be granted that the first arises from a definitely diseased state of the blood or system generally, I see not on what ground it can be argued, that the others, which differ only in the more wide diffusion of the local affections, may not also depend on the same diseased state of the blood. This disease seems very closely allied to that condition of the blood in which purulent discharges issue at the same time from several of the mucous membranes after some of the acute specific fevers, and to that chronic state in which every scratch or abrasion "festers," as the vulgar say. The existence of this condition of the blood or system generally, as a substantive disease, appears to have been in modern times first recognised by Tessier, in 1838. He, however, associated with it the cases in which disseminated abscesses are excited by the circulation of foreign matter in the blood. Tessier described the state referred to as a new pathological genus, under the name of the "purulent diathesis;" and he defined it to be a new modification of the organism characterised by a tendency to suppuration in the solids and coagulable fluids.

Amid much pathologically erroneous, the doctrine of Tessier appears to contain an important truth, viz., that in a certain number of cases of disseminated abscesses the febrile disturbance is established before any local disease is set up, and, consequently, before any pus is formed, and by inference, that the abscesses are, in such cases, merely the effects of a special alteration of the element from which that blastema is exuded out of which they are developed.

Although the morbid condition of the blood, which is thus manifested by its effects, is common as a consequence of the acute specific diseases, it sometimes arises without having been preceded by any other disease, *i.e.*, as a primary substantive affection.

Of this, the following case appears to me to offer some evidence:—

A man, aged 31 years, of temperate habits, and usually enjoying health, after feeling generally poorly for two or three days, became decidedly ill July 23rd. The symptoms were—heat of skin, headache, a furred tongue, and disinclination for all exertion. On the evening of the 24th, a red patch appeared on the outer aspect of either leg. On the 25th, there was induration of the same patches. On the 26th, there was redness of the left shoulder, and a red, indurated, elevated patch on the outer aspect of the left upper arm.

The mind was now confused.

He came under my care in University College Hospital on the 28th. At that time his mind was confused, and occasionally wandered. His movements were rather tremulous, and there were now and then some twitchings of the muscles of the face. He was rather restless, and slept but little. There was no headache. The complexion was thick, and rather sallow. The tongue moist and red at the tip and edges, and on its dorsum was a little dirty fur. The abdomen was rather full and resonant, but not tender. He passed, during twenty-four hours, one stool. The pulse was 96, moderately full, but rather weak. The heart's sounds were natural. Red patches,—the redness gradually shading into the hue of the surrounding skin, some indurated, others not,—were seated on the outer aspect of the right thigh, the calf of the left leg, the anterior aspect of the left tibia, the inner and anterior aspect of the right upper arm, and the centre of the right deltoid.

The whole surface was carefully inspected. There was not the slightest trace of suppuration at any spot; no redness nor tenderness in the course of any of the veins in the vicinity of the red spots, nor, so far as could be ascertained, elsewhere.

There was no cough. The respirations were 24 in the minute.

Time will not permit me to detail the daily notes of the case. Suffice it to say, that many other red patches appeared at various parts of upper and lower extremities,—that pus was evacuated from two seated on the anterior aspect of one tibia,—that fluid was effused into the knee-joints, and probably into one ankle-joint,—and that at no time was there reason to believe that any internal organ was the seat of purulent deposits. The patient recovered completely at the expiration of about a month from the first symptoms of illness.

The following is the abstract of a case of this disease, which occurred subsequently to measles :—

A boy, aged four and a half years, was admitted, under my care, into the fever ward of the hospital for sick children, in August last.

About a week after the disappearance of the rash of measles, the child never having been free from symptoms of illness, the wrists were observed to be swollen; then an abscess formed in the subcutaneous tissue of the back. Subsequently, collections of pus formed on the dorsum of the right hand, over the right wrist, in and over the left elbow-joint, under the right glutæus maximus, in the cellular tissue about the right psoas, and in the left hip-joint; and there were purulent discharges from the ears. He died about five weeks after the swelling of the wrists commenced.

No purulent fluid was found in any internal organ. The examination of the body was made by my friend, Dr. Ballard.

In these cases, as in *the majority of those belonging to the same order, the subcutaneous tissue and joints were exclusively the seats of the collections of purulent fluid.* In some such cases, however, abscesses are found in the lungs; but then they are generally small in size, few in number, and in a much less advanced state than those in the parts I have just mentioned; while it will be remembered, that when foreign solid matters, as pus corpuscles, &c., are thrown by the experimentalist into the venous current, it is the lungs which are alone affected in a large majority of cases; and when other parts suffer, the lungs are still the most extensively diseased.

Sedillot supports his doctrine, that the circulation of pus corpuscles with the blood is the sole cause of disseminated abscesses, by four orders of proof:—

1st. By the invariable pre-existence of a centre of suppurative action.

In the class of cases to which I am referring there is no pre-existing abscess or ulcer.

2nd. By the relation observed between the formation of pus in the veins, the passage of that liquid into the blood, and the development of pyæmia.

Of this relation there is no evidence in the class of cases of which I am speaking.

3rd. By the presence of pus in the blood, verified by observation.

There is no pus to be detected in the blood in those cases which I would class together under the name of pyogenic fever. Of this, repeated examinations enable me to speak with confidence.

4th. By the results obtained by the injection of pus into the veins of animals.

Now, as the symptoms and the *situation* of the disseminated abscesses are different in cases of pyogenic fever, and artificially induced pyæmia, it is improbable that the disseminated abscesses in the two have their origin in the same cause. And as the disseminated abscesses, artificially produced by Sedillot, were undoubtedly the effect of the circulation of pus with the blood, it is the more unlikely that the disseminated abscesses, in the class of cases I am describing, are the effects of the circulation of pus with the blood.

Thus, then, tested by Sedillot's four orders of proof, there are cases of multiple, or disseminated abscesses, which are not, or which cannot be proved to be directly or indirectly excited by the entrance of pus into the blood.

The acute specific disease, with which especially the acute purulent diathesis, or pyogenic fever, may be confounded, is, especially, typhus fever. From this it is distinguished by the activity of the febrile symptoms at the outset, the early delirium, the absence of eruption, and the rapid formation of the numerous centres of suppurative action.

Pathologically, the affinity of this disease seems to be with erysipelas.

I ought not to quit this subject without stating, that, although I have spoken only of the two varieties of the acute purulent diathesis, which especially fall under the cognizance of the physician, viz., that which

follows the acute specific diseases, and that which arises as a primary affection, yet Tessier considers, that phlebitis, phlegmonous erysipelas, and internal abscesses following operations, are consequences of this same general condition. The questions here raised are foreign to the object of these discourses.—*Med. Times and Gazette, May* 7, 1853, *p.* 463.

7.—CHRONIC RHEUMATISM; CARDIAC COMPLICATION; ALBUMINURIA; ANASARCA AND ASCITES; GOOD EFFECTS OF ELATERIUM.

Under the care of DR. TODD.

[It is well known that anasarca and ascites are prominent symptoms to which heart, lung, or kidney disease may give rise, and to remove which, our best energies are usually directed. In the case of the kidneys, we act usually on the skin by the vapour bath, and on the intestinal mucus membrane by elaterium. In the case about to be related, the present attack differed from all previous ones, inasmuch that the swelling of the feet was not removed after a few days, but gradually increased, so that the legs, thighs, and even abdomen, became distended. Her state on admission is described as follows:]

The legs are much swollen and œdematous, and there is distinct fluctuation of the abdomen, which measures thirty-four inches in circumference. The superficial jugular veins are much distended; they do not empty themselves when compressed below the point of compression; and there is an indistinct systolic bellows-sound to be heard. She passes in forty-eight hours about three pints of urine, which is loaded with albumen, and contains a number of epithelial casts and crystals of the triple phosphate of ammonia and magnesia. The patient has a constant cough, which troubles her very much, and prevents her from getting any sleep at night. She expectorates a large quantity of mucus; and over the whole of the front of the chest loud rhoncus is to be heard. Dr. Todd ordered decoction of scoparium, one ounce and a half; carbonate of ammonia, five grains; benzoic acid, five grains, to be taken every sixth hour; and ten grains of Dover's powder every night.

She continued this plan of treatment for sixteen days, without any diminution of the dropsy, but rather an increase of it, as she was passing less water than when she came in—viz., about one pint and a half in the day.

On the 1st of June, seventeen days after admission, she complained of convulsive movements of the limbs; and during the same night she was suddenly seized with epileptic fits, the whole body being convulsed; she foamed at the mouth, and bit her tongue. She remained unconscious after the fits till just before another one was coming on, when she used to rise up in bed. She complained of no pain; the pupils were dilated during the fit, but became contracted in the intervals. She had had eight of these fits by three o'clock the following day. Dr. Todd then saw the patient, and ordered her to take a quarter of a grain of extract of elaterium, made into a pill, every three hours. At six o'clock she began to be purged, and in the course of the twenty-four hours her bowels had

been opened as many as twenty times, and she passed a considerable quantity of water with each motion. There had been no symptoms of another fit.

Twenty-first day.—She was ordered to take the pills only every six hours, as they purged her a great deal; and she continued them in this way for ten days. She became very weak, but that was all she complained of. She could lie down in bed without her cough troubling her. The legs were not at all œdematous, and there was only a small quantity of fluid in the abdomen. The urine contained a much less quantity of albumen than on admission, and she was at this period passing about two quarts in the day. The woman was now ordered to take forty grains of compound jalap powder every morning.

Fifteen days after this, notwithstanding the bowels were freely opened by the powder, the quantity of urine diminished considerably, and the legs and abdomen began to swell also. The patient was therefore ordered to take a drachm of bitartrate of potash, and one drachm of spirit of nitrous ether, every four hours.

The diuretics, however, did not have the desired effect; she passed only about a pint and a half of urine in the day; the dropsy had increased more than ever, and after continuing this treatment for a week, she complained of convulsive movements of the limbs. Dr. Todd now resumed the hydragogue medicine, and she was ordered to take a quarter of a grain of extract of elaterium every third hour. This was continued for two days; she had no more symptoms of a fit, but was violently purged. Dr. Todd therefore ordered her to take the pills only twice a day.

This treatment was persevered in for a fortnight, at the end of which time the patient was much better; she slept comfortably at night, had lost her cough, and the dropsy had again diminished. The pills were now taken once a day, the bowels being thereby opened three or four times per diem.

At the end of another week this patient was discharged at her own request. She was able to get up and go about the wards; her appetite was good, and she slept well; the urine contained a slight amount of albumen, but no casts, and she passed about two quarts in the day. The dropsy had altogether disappeared, but she was very weak, and it was judged that a change of air would do her good.

It is remarkable how the epileptic fits (probably depending on the circulation of poisoned blood in the brain) were stayed by the numerous aqueous evacuations procured by the elaterium; and it might almost be supposed that some of the *materies morbi* was carried off by the stools. Some practitioners will, perhaps, think the doses given in this case large and pretty frequently repeated; but it is evident that any lesser doses would have failed to afford the relief which was here obtained, and we consider the case valuable as showing how much of the hydragogue can be given, and how far it can safely be pushed.—*Lancet, Aug.* 20, 1853, *p.* 166.

8.—*On Cases of Diseases of the Heart in relation to Rheumatism and Albuminuria.* By Dr. Barclay, Medical Registrar of St. George's Hospital, &c.—[After a very careful and extended enquiry into this

most interesting and important subject, Dr. Barclay thus sums up the results he has obtained.]

About a third of the cases of valvular lesion are associated with a rheumatic history, and among them there is a great preponderance of cases of simultaneous lesion of both sets of valves, next of the mitral alone, and scarcely any in which the aortic valves alone are diseased; it seems in most of these cases probable that during the first attack of rheumatism the mitral valves were alone inflamed, and at some future period also the aortic secondarily. In more than half the cases of valvular lesion the kidney was not quite healthy.

Disease of the aortic valves is more frequently associated with hypertrophy, and of the mitral with dilatation; adhesions of the pericardium mostly with dilatation. Atheroma of the aorta and disease of the kidney, each accompany a large majority of the cases of simple hypertrophy. In nearly half of all cases of disease of kidney indiscriminately, there is alteration in the muscular structure of the heart.

In regard to acute rheumatism it is shown that in the greater number of instances it occurs before 25 years of age, and that the largest proportion of cardiac inflammations are found between 10 and 15 years of age. Females are in a slight degree more liable to it than males, and are also more subject to cardiac complications. On the other hand, there are many more males than females admitted with confirmed disease of the heart, but the difference is less when the disease is of rheumatic origin. At the earlier ages almost all cases of confirmed disease of the heart, owe their origin to acute rheumatism, at more advanced ages it almost ceases to be found among the causes.—*Med.-Chirurgical Transactions*, 1852, *p.* 25.

9.—ON THE REMEDIAL EFFECTS OF LEMON JUICE IN RHEUMATISM, AND ON SOURCES OF FALLACY CONNECTED WITH ITS USE.

By Dr. G. Owen Rees, F.R.S., &c.

[Chronic forms of rheumatism are not so readily relieved by this remedy as the acute. Even among the acute cases there would seem to be a great difference, some cases yielding readily, others continuing for several weeks, in spite of this or of any remedies. We cannot expect that in every case the reason why this fact is so will be explained, but the following observations of Dr. Rees will tend to clear away much of the difficulty in most of them:]

Among the cases admitted from time to time into Guy's Hospital, I have had opportunities of satisfying myself that acute articular rheumatism is frequently complicated by the presence of three conditions, which tend to keep up the disease, and so to interfere with the favourable action of lemon-juice. These are,—1stly, Syphilitic rheumatism. 2ndly, Gonorrhœal rheumatism. 3rdly, A pseudo-rheumatic affection occurring in connexion with purulent discharges not necessarily gonorrhœal. Over these pathological conditions lemon-juice exerts no favourable influence.

Now not only may the above-mentioned complications interfere with the success of the remedy, but I have seen it exhibited in the last described, where the whole of the rheumatism present might in all probability be correctly attributed to the existence of a purulent discharge from the vagina, and where no remedy whatever produced a favourable influence, till recourse was had to treatment directed to the cure of the discharge.

The true nature of cases such as these is very apt to be overlooked; and I shall therefore here give an instance showing the necessity of attending to the point in question:—

Ann B—, aged thirty, was admitted into Guy's Hospital, Oct. 13, 1852, suffering from what appeared to be chronic rheumatic gout. When young she enjoyed good health, and commenced to menstruate when thirteen years old, and has always been regular. Has been married four years, and had a child about two years after marriage. Soon after her confinement, she had an attack of rheumatism affecting the joints. The pains in the head, before complained of, and which had continued up to this time, now ceased. This attack rendered her incapable of performing her household duties, and it continued to the time of her admission.

State on admission: Joints of extremities much swollen, and very painful on pressure. There is a copious yellow discharge from the vagina, but she denies ever having had gonorrhœa. Respiratory and heart sounds normal. Tongue clean, appetite good, bowels open. Pulse 84. To take iodide of potassium, three grains, in mint water, three times a day. Cod-liver oil night and morning.

18th. Complains of hemorrhoids; much the same. Six leeches to the anus. Linseed poultice to the part affected.

25th. No improvement in the pains in the joints. Guaiacum mixture, one ounce three times a day. Disulphate of quinine, two grains; acetic extract of colchicum, one grain; powdered ipecacuanha, two grains: mix, and make into pills; to be taken night and morning.

29th. Pains not at all relieved, but the medicine purges her. To discontinue the present medicines, and to take chalk mixture, one ounce, after each liquid stool, till diarrhœa cease.

Nov. 1st. Pains no better. Diarrhœa soon left her. Lemon-juice, three ounces, three times a day.

8th. No better. The vaginal discharge still continues. Compound tincture of guaiacum, half a drachm; compound tincture of camphor, half a drachm; mucilage mixture, one ounce, three times a day. Dover's powder, eight grains every night.

11th. Is no better. Soda poultice to the part affected. Continue medicine.

15th. Is much the same. Benzoic acid, five grains; compound tincture of camphor, half a drachm; mucilage mixture, one ounce, three times a day.

22nd. No improvement. Compound iodine julep, one ounce, three times a day. Dover's powder, five grains, every night. Turpentine liniment.

Dec. 4th. Is no better. Continue the medicines. From this date baths and iodine friction were tried up to

Jan. 3, 1853. Shoulders and arms are now rather less painful. Pulse 76, full and soft. Tongue clean. Bowels relieved once daily. Sleeps better at night. Conium mixture three times a day. Omit baths.

13th. Pains of limbs still continue. The discharge from the vagina is profuse. Powder of cubebs, one drachm, three times a day.

17th. Is decidedly improved. The swelling and tenderness of joints less. The discharge from the vagina less. Bowels regular.

From the last date given, this case rapidly got well; but, as will be seen, neither lemon-juice nor any other remedy afforded relief till the profuse purulent discharge was checked. The whole case was characterised by symptoms approaching to the subacute form; and it therefore would not have been selected from what I already knew as one likely to be much benefited by lemon-juice. The observations I have now made on the sequel of the case, will, however, I trust, be regarded as a step in advance, and serve to establish it as a more definite type of a class of cases which we shall in future at once exclude as unfit for treatment, either by lemon-juice, or any other of the ordinary remedies employed against rheumatism, but easily relieved when their true pathology is ascertained.

From what I have advanced, it will be observed, that I consider lemon-juice the antidote to the true rheumatic diathesis; and that I expect to account for failures in treatment, by detecting either complications, or complete pathological differences.

I have already given a case illustrative of the latter character, and I wish now in addition to direct attention to two other forms of disease belonging to the same class, which I have seen mistaken for rheumatism, and treated by lemon-juice, without the least benefit being derived. The first of these is the pseudo-rheumatic affection sometimes observed during the course of Bright's disease. Though the pathology of this affection is as yet but imperfectly understood, still the symptoms and progress differ sufficiently from those of true rheumatism to enable us to draw a distinction; and I believe we may now fairly add another distinctive mark in the fact that the disease in question is not benefited as true rheumatism is by the exhibition of lemon-juice. I have seen the remedy here fall into temporary disrepute till the mistake was detected. The other form of disease I would allude to, and which is perhaps characterised by as severe torture as any of those yet treated of, is observed in connexion with spinal deformity. Here the pains are most extreme, and vary in intensity according to the health of the individual. Of course lemon-juice cannot here be expected to benefit the patient, though its credit as a remedy has often suffered owing to its administration in such pseudo-rheumatic cases.—*Lancet, June* 11, 1853, *p.* 534.

10.—ON FATTY DEGENERATION.

[Dr. Handfield Jones after an elaborate review of the subject of fatty degeneration, thus concludes:]

We think that we have evidence of the following varieties of fatty change:

1. Fatty conversion of mere masses of dead matter, organized or non-organized, without or within the body.

2. Fatty degeneration of organized and living tissues, reducing them gradually to a lower grade of organization and vitality.

3. Fatty replacement, by a growth of fat-cells taking place on an organ which is either in a state of simple or fatty atrophy.

4. Fatty replacement of granular matter of epithelium without any degeneration.

We doubt not that these several conditions are in some measure allied, especially 2 and 3; but it seems to us, that to attempt to bring them altogether under one common head, when there are such manifest differences between them, would be an unwarranted generalization.

The causes of fatty degeneration have already been incidentally referred to. They are recognised by all observers as those which lower the vital energies. Defect of activity in the various excreting organs of course causes an accumulation of oily matter in the blood, which finds vent by being deposited in all the interstices of the organs, and taking the form of adipose tissue. The same will occur if, by means of the food, an excess of oily matter is introduced into the circulation. So long, however, as the organic life of the tissues persists, they will nourish themselves healthily out of this oil-laden blood; but when that begins to decay, then oily matter settles down in situations from whence the organizing force before excluded it. The effects of spirit drinking, illustrate extremely well the two principal conditions of the change. Impairment of excretory action, and pouring in of an hydro-carburet into the blood, cause it to be loaded with oil; while the debilitating action of the alcohol on the nervous system, and through it probably on all other parts, lowers their vital energies, and at length so enfeebles their organic life, that they can no longer maintain their healthy construction.

To attempt to enter upon the subject of the treatment of fatty degeneration would be out of place here; but we cannot close without expressing the feeling which is strongly fastened on our mind, that a large portion, probably the majority, of the diseases of the present day, are of the nature of degenerations, commencing unperceived, advancing gradually, and often scarcely attracting attention, till irreparable mischief is done. We do think it behoves medical men to impress strongly on the minds of parents and of friends, the deep need there is for watching carefully the first symptoms of failing health; and of not deferring to seek aid until serious disease has sounded its alarm, and disorganizing processes have commenced that can never be thoroughly repaired.—*Brit. and For. Medico-Chirurg. Review, July*, 1853, *p.* 45.

11.—*On the Relation of Drunkenness to Fatty Degeneration.*—The description which Rokitansky gives of the condition of the system in the so-called drunkard's dyscrasia, may, we think, be quoted with advantage, as it illustrates very well the effects resulting from an unnaturally fatty state of the blood, and from a lowered state of the vital

forces in the nervous centres, and throughout the system generally. He recognises an acute and chronic form. The latter appears as plethora, attended with a marked dusky colour and viscidity of the blood, and with a proportionate increase of its fatty contents. The condition of the solids results from this state of the blood, and is explained by it. The formation of pigment in the skin, the excessive, and at the same time qualitatively abnormal, formation of fat, and the mucous profluvia, are prominent symptoms. The bodies of old brandy-drinkers present very remarkable phenomena: the skin appears tinged of a dirty brownish hue (though parts naturally coloured—as the scrotum—may become pale); it has also a soft, velvety, fatty feel, like a negro's, and its epidermis is thin. In the subcutaneous tissue chiefly, and next in frequency, in the mesentery and omentum, fat is deposited in a quantity, either absolutely excessive, or at any rate disproportionate to the condition of the muscular tissue. The quality of this fat is similar to that of mutton suet. The muscular tissue is diminished in bulk, and is also pale. The formation of fat invades the muscles as the so-called fatty transformation; the liver, however, is especially thus affected. Even in the bones the formation of fat takes place in an excessive manner, at the cost of the osseous structure. All the mucous membranes, especially the bronchial and the intestinal, suffer from chronic tumefaction and blennorrhœa. The gastric mucous membrane, especially, is the seat of a chronic catarrh. A similar condition of hypertrophy is exhibited in the habitually congested membranes of the brain, in the form of turbidity, thickening, or chronic œdema. The brain is shrunken as from senile atrophy, with or without enlargement of its cavities, and serous effusions in them. The blood appears dark, viscid, without fibrinous coagulum; has a sticky, greasy feel; often contains fat, mixed with it in the form of oil-drops, in great abundance; or, in rarer cases, presents a whitish, milky, chyle-like turbidity. In the acute form there is a marked tendency in the whole mass of blood to remain fluid, to lose its natural colour, and to allow the transudation of dirty red serum; while oil separates on its surface in the farm of largish drops. The dead bodies exhale a remarkably sweetish smell, and quickly pass into decomposition. We have carefully perused the account which Dr. Huss gives in his work on 'Alcoholismus Chronicus,' of the morbid changes induced by spirit drinking. His description corresponds very closely with Rokitansky's, but is of course more detailed. He notices the frequent occurrence of granular kidney, and how this degenerative change is induced in such persons by intermittent fevers and rheumatic attacks more frequently than it would be in the healthy. The heart in drunkards becomes hypertrophied, afterwards overlaid with a fatty growth, while the muscular tissue wastes. The aorta is sometimes atheromatous; and the cerebral vessels, the smaller especially, are often dilated, and the coats of the larger brittle. The spinal cord is commonly healthy; sometimes it is wasted, like the brain. The voluntary muscles are generally flabby, their tissue thin, withered, pale, often seeming to be penetrated by fat; they waste, in extreme cases, to one-fourth or one-fifth of their natural size. The quantity of fat in the blood is shown by analysis to range from 117·8 (Le Canu) to .42·0 (Mareska) per 1000 parts; the

highest estimate of the quantity in health not exceeding 8·65. The serum is often milky, and in a more marked manner in those cases in which the opacity is caused by oil, than in others where it depends on the presence of proteine matter. The following circumstances are especially mentioned as accounting for the unnatural condition of the blood: —(*a*) The absorbed alcohol interferes with the taking in of oxygen into the blood and the giving out of carbonic acid, so that the blood remains in an unnaturally venous state. This is given as the result of Schultz and Klencke's experiments; but Vierordt and Prout have also shown that spiritnous drinks diminish the quantity of carbonic acid expired, and this to a greater extent when taken upon an empty stomach, when they would of course be most rapidly absorbed. (*b*) The alcohol interferes with chymification and chylification, hindering the proper neutralizing action of the bile on the chyme, and thus producing a morbid condition of the materials out of which blood is to be formed. (*c*) The liver, and (*d*) the kidneys, becoming themselves diseased, do not depurate the blood properly. (*e*) In consequence of pulmonary irritation from the expired alcohol and bronchial catarrh, respiration is not properly performed, and the blood from this cause as well as from (*a*), is not properly arterialized. Scharlau has found 30 per cent. more carbon in the blood of a drunkard than in that of a healthy man. The effects of continued abuse of alcoholic liquors may be briefly stated as disordered conditions of the primary and secondary assimilating processes; the latter appearing, in the more advanced stages, with nervous and muscular debility.—*Brit. and For. Medico-Chirurgical Review, July*, 1853, *p.* 32.

12.—*On Albumen in the Urine after Scarlatina.* By Dr. H. Bence Jones, F.R.S., &c.—[In a lecture on the relation of renal disorders to various diseases, Dr. Jones remarks:]

The question of the passage of the scarlet-fever poison out of the system, through the kidney, has still to be proved. The general treatment differs in no respect from that of Bright's disease. Except that recovery is more frequent, and that the symptoms yield more easily to treatment, I know of no difference between this disease and Bright's disease. Mercurials are as dangerous in the dropsy after scarlet fever as in Bright's disease. Diuretics are as much to be avoided; sudorifics and aperients are as beneficial. In extreme cases of both diseases, the benefit of elaterium might be illustrated by many examples, if my time admitted me to read them. In both diseases the blood becomes impure, from the accumulation of the products of the organic changes in the body. I might sum up the objects to be attained, if possible, in these few words, namely, relieve congestion, and purify the blood. The appearance of albumen in the urine in cholera is caused by passive congestion of the kidney, while the albumen, in rheumatic fever, is the result of active congestion. The albumen after scarlet fever may also, at least as regards its treatment, be considered as produced by a state of more or less active congestion of the kidney.—*Med. Times and Gazette, Sep.* 10, 1853, *p.* 258.

13.—*Cases of Acute Renal Dropsy—Complete recovery.* Under the care of Dr. Budd.—[After describing two cases of the above disease, in commenting on the treatment Dr. Budd remarks that the first thing is to relieve the inflammatory or congested conditions of the kidney, and that the best means of doing this are:]

1. General bleeding or cupping on the loins; or, if the patient cannot well bear the loss of blood, large mustard-poultices applied daily to the loins, for the sake of drawing the blood to the surface.

2. Compound jalap powder, or some other purgative of like action, in full doses, so as to cause copious watery discharges. These not only relieve congestion of the kidney, but probably serve to eliminate through the bowels noxious matters in the blood, which must always exist when the action of the kidneys is very defective, and which, indeed, sometimes exist previously, and conspire, with the influence of cold and wet. to produce the inflammatory or congested condition of the kidney in which the disease consists. No purgative is more generally suited for such cases than the compound jalap powder, and it is best given in a single dose, sufficient for the object desired, in the morning before breakfast. It then, in addition to the drain it causes from the mucous membrane, only sweeps away the refuse of digestion in the bowels; whereas, if it be given during the course of the day, it sweeps away food which the stomach has had the trouble to digest, but the nutritious elements of which are not yet absorbed.

3. After the congestion of the kidneys has been somewhat relieved by these active measures, it may be further much lessened by promoting free prespiration. Suppressed action of the kidneys, by the influence of cold and wet, seems to be a frequent exciting cause of acute and renal dropsy, and afflux of blood to the extended surface of the skin and free perspiration greatly relieve the congestion of the kidneys. Prespiration may be promoted by warmth; by the liquor ammoniæ acetatis, given alone, or in conjunction with ipecacuanha and camphor mixture; and, if need be, by an occasional hot-air bath.

4. A fourth means of relieving the kidneys is by keeping the patient strictly confined to bed. The warmth of bed promotes perspiration, and the horizontal posture tends to relieve congestion of the kidneys by facilitating the return of blood from them, and by lessening the rate of the pulse.

The active measures that are expedient, with the view of relieving, as speedily as possible, the congestion of the kidneys,—the continual escape of albumen in the urine, and the spare diet that must, of course, be enforced while feverish symptoms exist,—soon induce a state of anæmia, so that when the case, as happened in the preceding instances, terminates favourably, and albumen has ceased to pass off in the urine, small doses of the citrate, or some other preparation of iron, are generally useful.—*Med. Times and Gazette, May* 28, 1853, *p.* 553.

14.—*On the Use of Proteine in Scrofula.* By J. Taylor, Esq.—[Although proteine at first sight is a compound little qualified to act as a remedial agent, yet there is sometimes conspicuous evidence of its therapeutic effects, as in the following case:]

John H—, aged five years, a scrofulous boy, born of scrofulous

parents, has had enlarged cervical and inguinal glands since the period of dentition; has now numerous ulcers in various parts of the body and limbs; is pale and emaciated, with defective appetite; has been taking iron and other tonics, with and without iodine in combination, during the last six weeks, without any evident improvement. Ordered, three grains of proteine, to be taken three times a day, in sugar and water. After the first week the boy was decidedly better in his general health, looked more healthy, appetite improved considerably. In a month the mother remarked "she never saw such a change; the boy was growing plump, many of the ulcers had healed, though a few fresh ones had appeared. The dose of proteine was increased to four grains three times a day, and the ulcers to be dressed with zinc ointment.

Third month—.All the ulcers have healed except four, and when a fresh one appears it is much smaller than usual. Increase the dose of proteine to five grains three times a day.

Fourth month.—Three or four recent small ulcers still open; the boy's health so much improved that his aunt, who had not seen him for six weeks, did not know him again, and his father observed that as the boy was so much better, it would be needless to incur any further expense, and requested the medicine might be discontinued. The proteine was consequently omitted for a fortnight, and the little patient's health was observed to decline. The parents therefore requested the medicine to be resumed, and his health rapidly improved again. The proteine was continued for about two months longer, in not more than five-grain doses, twice, and sometimes only once, a day, embracing altogether a period of somewhat more than six months, when my little patient was observed to be quite well.

It may be remarked that this solitary case proves nothing. I could produce others, but the following may suffice:—

Jane B—, aged two years, an emaciated, strumous child, with tumid abdomen and enlarged cervical glands, and numerous ill-conditioned ulcers on the loins, nates, thighs, legs, and arms, has evinced symptoms of mesenteric disease ever since weaning, at nine months old; has been under the care of a surgeon for a month, and during that time has been gradually getting worse. Ordered zinc ointment, and occasionally a poultice of equal parts of linseed-meal and wheaten flour to be applied to the ulcerated parts; and to take, proteine, two grains, soda exsiccata, one grain, three times a day, in sugar and water.

First week.—The skin has become cleaner and more healthy, and some of the ulcers have healed; several that are now open display in a very remarkable manner the appearance of softened tubercles; the child looks more lively; bowels regular; appetite better; takes beef-tea twice a day, and milk night and morning. To have mutton for dinner.

Second week.—Greatly improved in every respect; has begun to run about again, which she has been incapable of doing for the last six weeks; nearly all the ulcers have healed; abdomen smaller; has gained flesh; appetite excellent; bowels regular; sleeps well. Ordered the proteine to be continued in doses of three grains, soda exsiccata, one grain, twice a day. The mother did not bring her again, but I saw her on passing the house a month afterwards, running about in excellent health and spirits.—*Lancet, Sept.* 24, 1853, *p.* 281.

DISEASES OF THE NERVOUS SYSTEM.

15.—ON NERVOUS DISEASES.

By Dr. George Johnson, Assistant Physician to King's College Hospital, &c.

[Dr. Johnson here dwells upon the slighter forms of nervous derangement from which the more serious ones,—as epilepsy, insanity, or delirium—are developed. He says:]

The general results of my observations with reference to the class of diseases to which I have alluded are: 1st. That in a large proportion of cases the more formidable derangements of the nervous system have their origin in some form of mental shock or anxiety. 2nd. When the nature and the origin of these nervous disorders are detected sufficiently early, the more serious forms of disease may often be prevented, and the slighter derangements entirely removed. 3rd. The method of treatment best adapted for the prevention and cure of the diseases in question admits of some variation in different cases, according to the nature and the cause of the symptoms; but there is one remedy which, when given in the mode and with the precautions which I shall hereafter indicate, is more efficacious than all others combined. That remedy is opium.

[Of such importance does Dr. Johnson consider opium in these cases that he says he might have headed his paper, "On the influence of opium in preventing and removing some of the injurious consequences of over-work and anxiety." He exemplifies the chief varieties of these affections by a reference to a few cases.]

Case 1.—The first case is that of a woman, L. H.——, 41 years of age, whom I first saw at the dispensary, on the 6th January, 1851. She had been a widow eighteen months, and, for a long time before her widowhood, she had suffered much from anxiety, in consequence of the intemperate habits of her husband, who had squandered his money, and failed in business. For many months before I saw her she could not sleep without being disturbed by frightful dreams and spectral visions. Her friends told her that she talked as much in her sleep as when she was awake; she drank neither beer nor spirits.. She had friends who were well off, so that she had never been in want; but her appetite was extremely bad, and she suffered much from flatulence and constipation. She had a painful sense of pressure on the top of the head, and her countenance was expressive of great anxiety. She had, at different times, been under the care of three medical men; one had called her disease tic-douloureux; another, she said, spoke of it as ague; and a third attributed her sufferings to inaction of the liver. She had been cupped and leeched, and several times blistered, but without effect.

It appeared to me that trouble and anxiety had disturbed her sleep, and taken away her appetite for food; and, as there was no evidence of any organic disease, I anticipated great relief from a few nights of quiet sleep, if by any means that could be obtained. With this view, on the 6th of January, I ordered five grains of the compound soap pill to be

taken every night, and a mixture, containing rhubarb and magnesia, with peppermint-water, to counteract the constipating effect of the opium. I told her to walk out daily, and I gave her hopes of speedy amendment.

She came to me on the 13th of January, and said, that she had slept better the first night after taking the pill, and on the second night still better; she had rapidly improved in every respect, and had a bright and cheerful expression of countenance. To continue the medicine.

My last report of her is dated the 17th January, and it is as follows: She considers herself quite well; she sleeps well without dreaming; the sense of weight on the head is gone; her appetite is good, and she has no discomfort after eating; she "feels quite a different person."

The simple explanation of this cure appears to be, that ten nights of sound sleep had sufficed to remove the wearying effects of many months of anxiety and restlessness. With reference to the question of prognosis, it is important to observe, that the chief cause of her troubles had long ceased to exist; her husband's intemperance, his misfortunes, and his death, had occurred many months before; what she needed was something which would, as it were, break the habit of dreaming restlessness, and opium has a marvellous power of effecting this object. This case is the type of a large number which have come under my observation, and in which the effects of a similar plan of treatment have been equally satisfactory. I will next give a few particulars of a case which differs from the preceding in the important fact, that the original cause of the patient's anxiety and illness was in active operation while he was under my observation, and consequently the treatment, although at first very successful, yet did not avail to prevent the development of confirmed epilepsy.

Case 2.—On the 17th March, 1851, I was called to see a merchant's clerk, J. R. S., aged about 28 years. I was told, that during the last three days he been seized with fits of violent delirium. When I arrived, he was quiet, and answered questions rationally. His skin was cool and moist; his pulse was moderately quick and soft, and his pupils were natural. I found that his head had been shaved, his temples leeched, and his neck blistered, and he had been kept on a rigidly low diet. The result of this treatment had been an increase in the violence of the delirium. I ascertained, not only from his family, but also from his employers, who were friends of my own, that he was a very well conducted man, and of strictly temperate habits. His wife told me, that for several weeks before his illness his nights had been very disturbed; that in his sleep he had talked almost incessantly of his business; that in the mornings he appeared unrefreshed; that his appetite had been bad, and he had been gradually losing strength. When I enquired if he had been in distress or anxiety, I was, at that time, told that the fatiguing and harassing nature of his employment was the only cause for anxiety of which his family were aware. It seemed evident, that the case should be treated as one of delirium from exhaustion; and accordingly I ordered him to take a mutton chop with a glass of porter, and at bedtime a draught containing forty minims of tincture of opium. The next day, I found that he had slept well, and there had been no return of

delirium. He rapidly recovered, and at the end of a week he returned to his employment.

About three weeks after he had returned to his work, I was asked to see him in his employer's warehouse, and I found that he had suddenly fallen in an epileptic fit, while engaged in washing his hands. I again enquired particularly for causes of anxiety, and again the only cause assigned by his family was the fatigue of his work. I saw him again in May, when I found that his nights were still much disturbed by dreams, and he was occasionally light-headed. I gave him strict directions as to diet and the general management of himself, advised him to take the compound soap pill occasionally at night, and to change his occupation, if he really believed that the fatigue of it was the occasion of his restlessness. The last piece of advice he had a natural unwillingness to adopt. He came to me again the last week in October, and told me that he had that morning been seized with a fit in the street, and further, that since he last saw me, he had had five or six fits, but on each occasion, except the last, he was in bed when seized. His wife told me, that his nights were constantly disturbed by dreams; that he talked, moaned, and frequently called out in his sleep. He was now afraid he should lose his situation.

It was not until the month of February, 1852, nearly a year after I first saw the patient, that I ascertained the real cause of his anxiety. His father then told me that my patient's wife was a drunkard, and that when intoxicated she was extremely violent; that she had more than once threatened to stab her husband, and on one occasion she had actually wounded his hand with a knife. My informant had from the first been aware that this was the cause of his son's restlessness and misery; but he had been unwilling to speak of it until matters were becoming desperate. The fits continued, and the poor fellow was compelled to resign his situation.

It is evident, that the information thus tardily given is the central fact in the history of this case, and that it was essential for the complete explanation of the phenomena. I had been assured by the patient's employers, that his work was not such as could injure any man of ordinary strength; so that there seemed no satisfactory explanation of his continued suffering until this part of his sad domestic history was revealed. The next case is one in which some very distressing nervous symptoms speedily yield to treatment.

Case 3.—A shoemaker, J. B., 31 years of age, came to the hospital on the 15th of January, 1852, and stated that about ten months before, he, his wife, and five children had typhus fever. They all recovered; but at the same time he lost, from the same disease, a brother, (who died in the bed next to his own at the Fever Hospital,) his mother, and his wife's father. Since this accumulation of illness and anxiety, he "has been unable to rally himself;" has felt melancholy; has experienced a sense of weight and noise in his head, and dimness of sight; he has had "shocking dreams," so that he has dreaded to go to sleep; when walking in the street he is often seized with dizziness, so that he would fall if he did not lean against the wall for support. He has a dread of sudden death. He is of middle height, well nourished,

but with a very anxious expression of countenance. He works twelve or fourteen hours a day at his business, and usually has a walk daily. He says that he never was addicted to drink, and he presents no indications of intemperance; his appetite is good, and his tongue clean. He attributes his nervous condition to the fever, and to the mental anguish which he suffered; particularly, as he says, when, on going to the Fever Hospital, he left his wife and all his children ill at home.

On the 15th January, I ordered pil. saponis co., gr. v., om. n., and a mixture containing rhubarb, carbonate of ammonia, and peppermint-water twice a-day, to counteract the constipating effect of the opium.

On the 20th January the report is, that he begins to sleep better, and his countenance is somewhat improved. Rep.

24th.—He does not know when he has slept so well as he did last night, he feels better, has less dread, and less sense of weight, and noise in the head. Rep.

On the 12th of February the report is, that he has been going on very well, and is improving in every respect. He has taken no opiate pill for the last ten days, but he has slept well all night without unpleasant dreams; the sense of weight on the head is gone, and his spirits are good; he has less noise in the ears, and his sight is improved. Since the 27th of January he has taken, Ferri sulph. gr. ii., infusi quassiæ ℥i., ter die. To continue this.

Some days after the last report I met him in the street, when he told me that he was quite well, and had not thought it necessary to come again to the hospital.

The phenomena of this case admit, as I think, of no better explanation than this,—that, to use the patient's own words, "he had been unable to rally himself" from the state into which he was thrown by the conjoint influence of the fever and intense mental anxiety. An opiate pill, taken for about eighteen nights in succession, soon procured for him sound sleep, unbroken by the horrid dreams which had distressed him for the previous ten months; he was refreshed by this sleep, and quickly regained his usual state of health.

While I was engaged in writing this lecture, I called on this patient, and ascertained that he still suffers in some degree from a sense of weight and noise in the head, and he looks somewhat anxious, but his sight is good; and, although he has had much anxiety from the death of his two children, he has never relapsed into the nervous, restless state, which he presented when first he came under my observation.

The next case will serve as an illustration of the terrible results which may ensue when the state of dreaming restlessness which existed in the preceding case is permitted to continue unchecked.

Case 4.—A. S., a warehouseman in a printing-office, 29 years of age, came to the hospital on the 5th July, 1851, and stated, that he was subject to epileptic fits. I perceived that his intellect was confused, and his memory bad, and I requested him, when he next came, to bring his wife with him. I found that she was a very intelligent woman, and it was from her that I obtained the chief part of the following remarkable history. Her husband has always been a sober and well-conducted man, and he never had any serious illness until he became subject to fits, the

origin of which she thus accounts for. About seven years ago, he was returning with his wife and some friends from Epsom races, when a child accidentally fell under the wheel of his chaise, and was killed. The poor man was much shocked and distressed when he saw the dead body of the child, whose head had been crushed by the wheel. In the course of the following night, he started up in his sleep, and called out, "Oh, save the child!" He continued to do the same almost every night, and sometimes two or three times in one night. When he started up in this manner, he often screamed so as to awaken and terrify his children, at the same time he struggled and clutched with his hands; and when his wife aroused him he generally appeared quite unconscious that he had been dreaming or making a noise. At other times, he complained of having frightful dreams, and, putting his hand to his head, would say, that he felt as if he were going out of his mind. Sometimes he exclaimed, "That child haunts me night and day!" at other times, "There is that child again!" and often when, in the street, he has seen a child near a horse, he has been in great terror, and his hands have clutched convulsively. The phenomena, which I have described, continued without addition for two years, but about the expiration of that period, he was seized one morning soon after getting up, with a sudden and violent fit of convulsions. About two or three weeks afterwards, he had two similar fits while in bed, and in about six or seven weeks after this, he had another attack. The fits, which are evidently of an epileptic character, have frequently recurred up to the present time; he has sometimes had three or four fits in a day, and on one occasion he had as many as five attacks in one day. The longest interval between the fits has been eight or nine weeks. His wife has observed that the fits have always been more frequent when he has been weakened by any means. The only occasion on which he had as many as five fits in a day was this,—he went as out-patient to one of the hospitals, and while there he was seized with a fit. Immediately after the fit was over, he was cupped on the neck; the operation was quickly followed by another fit, and in the course of the evening he had three more attacks. These facts seem to be in opposition to the theory, that cerebral congestion is an essential cause of epilepsy. One of the most remarkable features in the history of this poor man is the fact, that he has continued to be haunted in his sleep almost every night by the same horrid vision of the child, with similar startings up, screams, and exclamations. This had occurred, as his wife assured me, so lately as during the night before these notes of his history were taken.

Rather more than a year ago, his wife found him, after one of the fits, preparing to cut his throat with a razor. He said, "He had been told to do it, and he must." He then became quite maniacal, and continued so for two or three days. About six months ago he once attempted to jump out of a window, and about a month after this he wandered away from home for two nights and a day, and then returned in a distracted state, without being able to give a better account of himself than that "he had been taken to a station-house by the police, and that he had been by a pond of water; but he did not know whether he had intended to jump in or not." He has once fallen down stairs, and has often been brought

home bleeding from having fallen in a fit in the street. His wife, who is apparently a strong-minded and courageous woman, has been so much harassed by his long and painful illness, that she is disturbed by unpleasant dreams, and often gets out of bed in her sleep.

When I saw him in July, 1851, he had the appearance of rather robust bodily health; he was of middle height, and his limbs were firm and muscular; his head was well formed; hair and complexion dark; his expression was heavy and fatuous; he had been well educated, but since the commencement of his illness his memory had gradually failed, and all his mental faculties appeared to be more or less impaired. There was no loss of sensation or of the power of motion. He complained of constant pain in the crown of his head, but his appetite was generally good. I lost sight of him quickly after I learned his history, and I had no opportunity of observing the effect of treatment. There was little ground for hope in so inveterate a case; but it is probable that much of his mental and bodily suffering might have been prevented, if, at any time before the occurrence of the epileptic attacks, he had taken for a few nights some opiate pill or draught; and if by that means the habit of dreaming had been broken, as my experience of many analogous cases has taught me that it probably might have been. The history of this case well illustrates the tendency which the habit of dreaming restlessness, when once established, has to perpetuate itself, and to induce other serious consequences.

I will now give a few particulars of a case, which will serve to show, that great relief may sometimes be obtained even after the symptoms have existed for a very long time.

Case 5.—R. M., a tailor, was 32 years of age when he first came under my observation, in October, 1850. He had been a delicate child, but, after the age of 9 years, he became healthy and strong, and continued so until nine years ago, when he had reached the age of 23. At this time, his father, who had a very good business, absconded, taking all his property with him, and leaving his family destitute. My patient was the eldest son, and he now had to provide for thirteen persons besides himself, including his own wife and one child. From this time he was fearfully harassed, and has suffered the usual horrors,—restless nights, spectral illusions, and confusion of thought, to a degree which has often rendered it impossible for him to attend to business; he has, besides, been distressed by temptations to commit suicide, which he has been enabled to resist only, as he says, by the force of religious principle which he happily imbibed in his childhood. At one time, for a period of two or three years, he was so nervous as to be incapable of taking care of himself, and he had two men to guard him. His habits were always strictly temperate. It may be well to state, that this history was obtained, partly from himself, and partly from his wife, who is a very intelligent and, to all appearance, a very truthful woman.

When I first saw him, he was tolerably well nourished, but his face was pale; his expression was torpid, rather than anxious; his sleep was disturbed; he complained of great confusion of thought, and of "losing himself;" he was desirous to take a situation as foreman in a shop, but he had no confidence in his ability to discharge the duties of such an office; he had a slight cough, and a great dread of consumption.

I did what I could to encourage him. I assured him of his freedom from bodily disease, and of my hopes that he might recover. I advised him to take a walk daily in the open air; and, on the 28th of October, I prescribed pil. saponis co., gr. v., om. n., et tinct. ferri sesquichl. ℿxx., inf. quassiæ ℥j. ter die.

On the 11th November, the report is, that his appetite has been much better since taking the medicine; he now sleeps soundly. Rep.

Nov. 18. He is looking much better and brighter; he now feels that he can do his work, and he is confident that he shall get on and recover. He has had no confusion of thought the last few days. Rep.

Jan. 13. He has continued to improve since the last report, and considers himself now quite well; his countenance is natural, cheerful, and intelligent; he sleeps well, and has neither dreams nor fears; "life is now a pleasure to him, instead of being a constant dread." He has no work at present, but he feels quite fit for work. He has continued to take the mixture regularly, but the night pills only occasionally.

March 17. Two days after my last report, he undertook the management of an extensive tailor's business, which he conducts with ease and comfort to himself, and to the entire satisfaction of his employers. He sleeps well, without dreaming; his appetite is good; he declares that he never was better in his life, and his wife is of the same opinion. He looks perfectly well and strong. Since the last report he has taken no medicine, except an aperient pill occasionally.

In no other case which has come under my observation have symptoms so serious, and so long continued, disappeared so speedily and completely as they did in this instance. The improvement, too, has been permanent. I saw this man so recently as the 15th March, 1853, when he told me, that he has continued in the same situation for a period of two years, and, although his employment is very laborious and harassing,—his hours of business being from seven in the morning until ten or twelve at night,—he has not been one day absent on account of illness. He sleeps and eats well, and his countenance is cheerful and intelligent.

The five cases which I have thus briefly described will suffice to convey an idea of the general character of the symptoms which may result from the influence of mental shock or anxiety. I proceed now to the consideration of the most frequent *causes* of mental anxiety, with a view to facilitate the recognition of them by those who are investigating the history of nervous diseases.

The causes of mental anxiety are very various, both in kind and degree; the influence, too, of the same causes is greatly different upon different classes of minds, the difference being dependent partly upon the original constitution of mind and body, and partly upon education and habits of life. It will be needless to dwell upon those causes of mental anxiety whose influence is immediately and universally recognised,—such as the illness or death of friends, or, what is sometimes worse than illness or death, the misconduct of any one in whom a deep interest is felt; reverses of fortune; failures, and disappointments in business. The operation of these causes is so obvious, and so powerful, as to be at once perceived, even by the least observant. It is of practical importance to notice the different effects upon mind and body which are pro-

duced by grief for past and present calamities, and by the dreadful anticipation of future evil. I am persuaded that the last-mentioned influence is, on the whole, the most frequent and the most powerful. There are few men or women who have not dreaded a hundred evils which have never come upon them; and every physician must have observed the miserable consequences of an over-anxious care for the future. Any doubt which may at first arise as to the correctness of the statement, that the dread of future evil is, on the whole, more injurious, both to body and mind, than even the influence of present care and sorrow, will, I think, be removed, if we consider how much the dread of future and uncertain consequences is mingled with, and adds to the weight of most of those evils which are actually present. I have found the recognition of this fact to be essential for correctly interpreting the mental and bodily condition of some of my poorer class of patients; and I will illustrate my meaning by one or two examples which are not exact transcripts of any single case, but which are drawn from a multitude of observations, and which I believe to be strictly true to nature.

A tailor, of middle age, who has had no previous illness, complains that, for several weeks past, he has been losing flesh and strength; his appetite has fallen off, and his sleep has been disturbed by frightful dreams and spectral visions. He has a sense of weight on the head, and his sight is becoming dim; he is distressed by palpitation and shortness of breath, and his pulse is slightly quicker than natural, but soft and compressible, and there are no physical signs of disease within the chest; he has some dyspeptic symptoms, perhaps a sense of weight and fulness, with flatulence after meals, but his tongue is clean, and the urine presents no important deviation from the normal condition. We see in the expression of the patient's face unmistakeable indications of an anxious mind, and we begin to make inquiries respecting his history,—inquiries such as a patient will rarely hesitate to answer when he perceives that they are not suggested by an impertinent and unfeeling curiosity, but that they are prompted by a hearty sympathy with his sufferings, and an earnest desire to obtain such an insight into their nature and origin as will best enable the physician to afford the relief which is sought for at his hands. The result of our inquiries is, that he is of strictly temperate habits, and that he has had no great trouble or cause for sorrow; his wife and children are well; he has had regular employment, and he is not in debt. If we ask why, then, he appears and is so nervous and anxious, he will perhaps reply that he cannot tell, for he does not know. Pursuing our inquiries, with a firm belief that such a group of symptoms, and such an expression of countenance cannot be unassociated with mental anxiety, we find that he has a family of six children, and that, in order to support them, and to keep himself free from debt and difficulties, he has been working at his trade for sixteen, or perhaps eighteen, hours a day; that for a long time he continued to do this without much inconvenience; but a few weeks or months ago he began to sleep less soundly than formerly, he felt tired in the morning, his appetite and strength diminished, and he then went through his day's work with difficulty. At this point mental anxiety began, for increasing weakness naturally suggested a doubt as to his ability to continue his work; and

then came a dread of consequences. How are he and his family to live when he is unable to work? His fears increase all his difficulties, for they suggest frightful visions in his sleep, and a dread of some bodily disease almost paralyses him when awake; his sight is growing weak, and he anticipates total blindness; his heart often beats violently, and he believes that it must be in a state of incurable disease.

I have many times observed the group of symptoms which I have described in needlewomen, who frequently work the whole day and half the night, in hot and ill-ventilated rooms, who rarely have an opportunity for taking exercise in the open air, and whose earnings are so small as barely to suffice for the maintenance of themselves and others who may be dependent on them. In such circumstances, an apparently trifling cause, some slight illness, which partially unfits them for work, or a temporary lack of employment, or inability to complete a certain amount of work by a given time, will suffice to give rise to a train of nervous symptoms, which, probably, will continue and increase, unless checked by the timely administration of remedies. The group of symptoms which I have referred to may occur both in men and women whose habits are strictly sober; and I have repeatedly seen them in patients who, for a long time, have entirely abstained from the use of fermented liquors. It is scarcely necessary to say, that intemperance will aggravate the effects of anxiety to an extreme degree, and that in many instances, the consciousness of this degrading habit, and the miseries which it brings with it, are the chief causes of the anxiety, which, acting upon an ill-nourished and weakened body, excites those nervous symptoms to which the drunkard is liable. The effects of over-work and anxiety upon persons of strictly temperate, and even abstemious habits, are sometimes quite identical with the well-known symptoms of delirium tremens. One of my patients, whose habits had for several years been temperate, was suffering, when he came under my observation, from anxiety consequent upon the loss of his money; and he assured me that his dreams and spectral visions were then precisely similar to those which he had formerly experienced when he had delirium tremens from intemperance. He was quickly cured, too, by the treatment which would have been appropriate for delirium tremens. Now, the most reasonable explanation of the identity of symptoms arising from causes so apparently different appears to be this,—that in both classes of cases, there is mental anxiety, although different in its nature and origin; and this mental anxiety is the most important element concerned in exciting the morbid phenomena. It is too obvious to require comment, that the delirium which is caused by the presence of alcohol in the blood,—the delirium of intoxication,—is entirely different from that which is called "delirium tremens." The latter form of delirium does not come on so long as mind and body are under the stupefying influence of the alcohol, but when, after, it may be, a week's debauch, the man awakes to a consciousness of his condition; his money gone, disgrace, and perhaps debt incurred; then it is that delirium occurs, excited, as is probable, by the conjoint influence of a mind agonised by remorse and fear, and a body enfeebled by the insufficient supply of food which is generally involved in a fit of drinking. An Irishman once came to the hospital, and des-

cribed to me certain nervous symptoms from which he had suffered for a period of three or four weeks. His sleep was disturbed by frightful dreams, his spirits were depressed, and his appetite bad. He was habitually very abstemious, but immediately before the commencement of these symptoms he had been once intoxicated, and he attributed his nervous symptoms to the regret which this lapse had occasioned him. I believe that his explanation was correct, and I have met with other similar instances, which confirm me in this opinion. I am desirous to guard against the notion, that the delirium and the other nervous symptoms which supervene upon intemperance are attributable to the merely physical consequences of that vice. No one, I am sure, could be found to maintain such a proposition in the abstract; but there is reason to believe, that both our pathology and our practice are sometimes tinged with a belief to this effect.

It is of essential importance, with reference both to the pathology and the treatment of delirium, to recognise the fact, that, in a very large proportion of cases, there is a mental as well as a bodily element; in some instances the mental influence preponderating, and in others the corporeal. There can be no question as to the important share which the mind has in the production of those nervous symptoms, which are frequently occasioned by immoderate intellectual exertion. In such instances, while the body is enfeebled by the neglect of wholesome exercise, and by the loss of the required amount of sleep, the mind becomes morbidly excited and anxious, and this occurs indifferently, whether the excessive labour be the result of necessity, or whether it be prompted by an inordinate desire of wealth or by an ambitious craving for distinction. In these cases, too, as in the case of the overworked tailor or needlewoman, the mental anxiety will increase in a rapid ratio as the gradual exhaustion of mind and body renders the attainment of the object so eagerly sought for more difficult and doubtful. And here, too, it may be observed, that indolence and neglect of duty often occasion as much mental disquietude as excessive labour and fatigue. Those who *kill time* are not unfrequently

> "Haunted much by visions strange,
> And sure perplexity of roaming dreams,—
> The spectres manifold of murdered hours."

The infringement of moral laws brings discomposure and anguish upon the mind, as a physical injury gives pain to the body. Both classes of pain, too, are protective and beneficent in their design and tendency.

That form of delirium which has been so well described by Dupuytren, under the name of *traumatic delirium*, might appear to a superficial observer to have its origin in purely bodily causes. But it is acknowledged by those who have most accurately observed this form of delirium, that it bears no proportion to the extent of the bodily injury with which it is associated. Some patients remain free from delirium after the most frightful accidents, while others become furiously delirious after comparatively trifling injuries. Thus Dr. Todd quotes from Dupuytren the case of a young man, in whom delirium came on in consequence of a slight injury to one of his toes, and killed him in two days. I am persuaded that a careful attention to the previous history and the

mental condition of these patients can alone reconcile these apparent discrepancies. A man who has been working to the full extent of his powers to support his family, and who has a laudable anxiety to keep free from debt and difficulties, is, as we may say, predisposed to become delirious, if he suddenly find himself disabled by some accident, however trifling the injury may appear when considered only with reference to the body. If the habits of the patient have been previously intemperate, he is for various reasons the more likely to become delirious; for it is probable that the mind of such an one has been discomposed by the habitual neglect of his duties, while the body has been weakened by the substitution of alcohol for nutritious food; and if, in consequence of some accidental injury, his accustomed stimulus be withdrawn, and he be confined to bed with the unpleasant companionship of his own thoughts, delirium is a very frequent consequence, and one, too, which it is not difficult to account for.

We frequently meet with instances of severe and long-continued nervous derangement, as a result of a momentary but violent mental shock. Cases of epilepsy, in which the fits were the result of fright, are very common, and, in several instances which I have seen, the patient has been terrified into the fits by the cruel and wicked trick of dressing up a ghost. In one case, a little boy was frightened into confirmed epilepsy and paralysis by a policeman, who threatened to take him to the station-house, because he was making a noise in the street. The child ran a few yards, and fell in a fit at his mother's door. In another case, a man fell immediately in an epileptic fit at seeing another man killed by a fall from a scaffold. It is well known, too, that some nervous persons have been frightened into epilepsy by seeing the fits in others. And a very important practical lesson to be derived from a knowledge of this fact, is to protect the young and the nervous from so terrible a danger. Some time since, I heard of two twin brothers, about 14 years of age, one of whom became epileptic from some cause which I could not ascertain. They both continued to sleep in the same room; and the result was, that the second soon became epileptic too. In future lectures I shall return to the subject of epilepsy; and I shall refer to some of its most frequent causes and modes of origin, with a view to its prevention, in that numerous class of cases in which epilepsy is preceded by a long train of premonitory symptoms. As an illustration of this class of cases, I may refer to the history of the second and fourth cases which I have given in the present lecture.

The cause of sudden and violent mental shock are very numerous, and most of them are so obvious as to require no comment. One of my patients, a woman, has been restless and excessively timid since receiving a fright from the collision of two steam-boats, and a false alarm, that the boat on which she was travelling was sinking. The alarm of fire is a very frequent cause of long-continued nervousness. During the last two or three years, I have had several patients, both men and women, who had continued to dream of fire, and to be excessively nervous and timid, since the burning of the Olympic Theatre, near which they all lived at the time of the accident.

Within the last two years I have met with some instances of nervous

restlessness, which the patients attributed to the dread they had entertained of the cholera when last it prevailed in London. These cases afford additional illustration of the tendency which this nervous condition has to perpetuate itself, and so to continue long after the original cause has ceased to operate. The cure of these affections is often not difficult; but I shall speak of that in my concluding lecture.

One of the chief objects which I have proposed to myself in the latter portion of this lecture has been to indicate some of those less obvious sources of mental disturbance and anxiety which are likely to escape the observation of any inexperienced pathologist who has not been prepared for their recognition. In directing attention to this subject, I have acted in the spirit of a suggestion which is contained in the following remarks by Dr. Latham. "Prior to diseases, to their diagnosis, their history, and their treatment, prior to them, and beyond them, there lies a large field for medical observation. It is not enough to begin with their beginning. There are things earlier than their beginning which deserve to be known. The habits, the necessities, the misfortunes, the vices of men in society, contain materials for the inquiry, and for the statistical systematising study of physicians, fuller, far fuller, of promise for the good of mankind, than pathology itself."

The kind of inquiry here referred to and commended to our notice by Dr. Latham, is, I believe, an essential element of truly scientific pathology; and, with reference especially to diseases of the nervous system, its paramount importance is indisputable. It would not be difficult to show, that many serious errors which have prevailed with regard both to the pathology and the treatment of these diseases, are attributable to a disregard of that portion of the patient's history which precedes the occurrence of actual disease.—*Med. Times and Gazette, Aug.* 13, 1853, *p.* 155.

16.—ON THE CONSEQUENCES OF MENTAL ANXIETY.

By Dr. George Johnson.

[The effects of mental anxiety are varied by many circumstances, as edution, position in society, habits of life, &c.; but there are certain symptoms common nearly to all cases. Either there is sleeplessness, or the sleep is unrefreshing, and disturbed by frightful dreams, and, says Dr. Johnson,]

One of the consequences of mental anxiety which is as often as any other associated with the disturbed sleep to which I have already referred, is a more or less complete loss of the appetite for food. In only a very small proportion of the cases which have come under my observation have I been told by an anxious, restless, dreaming patient, that he could take his food as usual. In many instances, too, the digestive powers are much impaired; there is pain or a sense of fulness with flatulence after eating. In some cases severe gastrodynia with waterbrash and occasional vomiting are complained of. I am careful not to confound with the cases to which I now refer others of a different kind, cases of

dyspepsia, which are the result of intemperance, or other cases in which the dyspeptic symptoms have been excited, or, at any rate, perpetuated and aggravated by a too liberal administration of stimulants to some weak and nervous patient, who has been exhausted by an attack of illness. It is very important that the physician should clearly perceive the nature of the last-mentioned cases of dyspepsia, and that he should be alive to the danger incurred by a weak and anxious patient who takes wine and beer frequently and freely, because, as he says, he has no appetite for food. Such a patient should be warned that the first step towards the recovery of his appetite and the strength must be an entire suspension or a greatly reduced supply of alcoholic stimulants as an article of diet.

Returning now to the more immediate effects of mental anxiety, it is perhaps difficult to determine whether the loss of appetite is a consequence of the patient's sleepless condition, or whether the restlessness is a result of the diminished supply of food; or whether, as is probable, the two conditions exert a mutual influence upon each other. There are facts which seem to favour each of the explanations which I have suggested. Probably most persons have experienced, in some degree, the power of mental emotion to take away the appetite for food and to disturb the process of digestion. On the other hand, the influence of an empty stomach, or of a sense of hunger in preventing sleep, and of a moderate fulness of that organ in promoting drowsiness, is well known. One fact which I have very frequently observed, tends to show, that the disturbance of the nervous system, and the restlessness, are first in the order of time and importance, and that the derangement of the digestive organs are consequent upon these. I allude to the manner in which opium exerts its beneficial influence. A man who has been restless for many months, and who, during the same time, has not enjoyed a single meal, after taking a grain of opium at bed-time for a few nights, sleeps soundly for several hours, and then awakes with an appetite for food; refreshing sleep returns each night, at first with, and soon without, the help of opium, and the appetite often becomes voracious, like that of a patient recovering from a fever, or from some other exhausting illness. Now, it is contrary to all experience to suppose, that opium would, by any immediate influence upon the stomach, increase the appetite, or assist digestion. The tendency which it has to disturb the stomach, and to produce sickness, or nausea, is one of the difficulties which we sometimes have to contend with when we are most desirous to give the medicine. This well-known action of opium upon the stomach, and the fact, which I have observed in numberless instances, that the appetite returns only after the opium has procured sleep, tends to prove, as I have said, that the derangements of the nervous system, in the cases referred to, are first in the order of time and importance.

That the combined effect of loss of sound refreshing sleep, and loss of appetite, with impaired digestion, should be to affect, in a very marked manner, the nutrition, and the strength of the entire body, is no more than we should have anticipated, and is what we actually observe. Emaciation and debility, in a greater or less degree, are present in almost every case where the primary symptoms have been of long duration.

One man, who had suffered much from restlessness and frightful dreams, in consequence of anxieties in his business, assured me, that during a period of two years, his weight had diminished by four stone,—it had fallen from fifteen stone to eleven,—and this statement appeared quite consistent with the loose fit of his clothes. Another man, who had suffered in a similar way, in consequence of misfortunes, had lost, as he informed me, from two to three stone weight during a period of two years. This was one of the cases in which, after a long period of nearly total inability to eat or to digest food, a voracious appetite became almost a matter of complaint, after refreshing sleep had been procured by the temporary use of opium. Another patient, a woman, who had suffered from anxiety, restlessness, and loss of appetite for several months, had diminished in measure round the waist from 24 inches to 19. After taking five grains of pil. saponis co. for a few nights, she began to sleep well, and to eat so voraciously, that, as she told me, she felt ashamed to eat so much, and her husband was quite anxious about her great appetite. The result was, that within a month she had gained three inches in measure round the waist. These measurements were her own, but the rapid improvement in her appearance was quite confirmatory of her statement. It is obvious, that so considerable a defect of nutrition as I have indicated must react injuriously upon the mental disturbance in which it originated; for there can be little doubt, that the depressing and disturbing influence of mental emotion is, *cetæris paribus*, in proportion to the feebleness of the body; and this is a point of pathology which it is of great practical importance to remember. A pretty certain recipe for the production of delirium or some serious form of nervous disease, would be to take an anxious man, and to bleed, or purge, or starve him, or by any other means to reduce rapidly his bodily powers. It is painful to think in how many instances this mode of practice has been adopted by those who have been taught to believe, that furious delirium is a symptom of what is called phrenitis, and that the cure is to be attempted by the fearless use of antiphogistic measures.

Not only does the enfeebled condition of the body react injuriously upon a disturbed and anxious mind, but the combined action of depressing mental emotion and of the bodily weakness which it induces, through the agency of sleeplessness and loss of appetite, tends to diminish the power of resisting injurious influences to which the body may be exposed, and to develope any germs of disease which may have been latent in the system. The origin of structural disease in various organs may, with reason, be classed among the consequences of mental anxiety. Nor is it surprising that this should be so, when we reflect upon the exhausting influence of long-continued abstinence and watchfulness. In one case which came under my observation, a poor woman, 34 years of age, actually died from anxiety and exhaustion, without the occurrence of any organic disease to account for the fatal result. I first saw her about a month before her death, when she presented every indication of great grief and anxiety. She had been unkindly treated and deserted by her husband, about five months before; and from this time she had suffered from sleepless nights, with spectral visions, and an almost total loss of appetite. She complained of shortness of breath and palpitation, and

she had a cough, with mucous expectoration. The impulse of the heart was increased, and there was some large crepitation at the bases of the lungs. I gave her tonics and opiates, and encouraged her to walk out while she was able to do so, but all without benefit; she could neither sleep nor eat; she daily grew weaker, and died on the 28th of April, about a month after I first saw her. I examined the body on the 2nd May, and found congestion of the lower lobes of the lungs, some dilatation and hypertrophy of the left ventricle of the heart, without disease of the valves or aorta; and a remarkably liquid state of the blood, scarcely one coagulum being found in the heart or in the vessels. Both the liver and the kidneys were somewhat congested, and their secreting cells presented, on a microscopical examination, some slight deviations from the normal appearance. All the appearances observed might, as I think, be attributed to the altered condition of the blood, and this to the want of sleep and food. The anatomical changes were certainly insufficient to account for the poor woman's death. It is a question which does not admit of a very precise answer, how far the hypertrophy and dilatation of the ventricle had been occasioned by the irregular and violent contractions of the heart which were excited by mental emotion, and in what degree they were dependent on any impediment of the circulation which may have resulted from an impoverished and abnormal condition of the blood.

The influence of mental anxiety in predisposing to attacks of disease in various organs, in diminishing the curative powers of nature, and in counteracting the effects of remedial measures, constitutes a subject of wide extent and of great importance. My present design is limited to a passing allusion, first, to some of the commonest forms of functional disturbance of the abdominal and thoracic organs, which are a frequent source of groundless alarm to the patient, and which may sometimes mislead the physician; and, secondly, I shall speak of those more formidable diseases of the nervous system, which often originate in, or are associated with, mental anxiety.

I have already adverted to those derangements of the digestive organs which are very commonly associated with mental anxiety. There is, however, one consequence of those derangements which I have frequently observed, but of which I have not yet spoken. I allude to the occurrence of symptoms referable to the urinary organs, and which sometimes occasion an unfounded dread of serious disease. Frequent micturition, and pain in the back are the symptoms complained of, and these are often supposed, by an anxious patient, to depend on a diseased state of the kidneys or bladder. On examination, it is commonly found, that the urine is unusually acid, and deposits an abundant sediment of the lithates on cooling. The acid urine irritates the kidneys and bladder, and thus occasions the pain, and the frequent micturition. In other cases, the urine is alkaline, with a copious phosphatic sediment. These states of the urine are, of course, not peculiar to nervous or anxious patients, but, since any pain is a source of alarm to this class of patients, it is important that the practitioner should be prepared to give a correct explanation of the symptoms, and to apply the appropriate remedies. In some instances, the pain in the back is very severe, and its seat appears to be

in the lumbar muscles; but I have met with more than one case of the kind which has been mistaken for inflammation of the kidneys, and treated as such. One of my hospital patients, a carpenter, had severe pain in the back, which he thought was caused by inflammation of the kidney, for he had a similar pain some months before, which was called inflammation of the kidney, and for which he was treated by cupping and other active measures. On that occasion, he was ill several weeks. He had a very anxious countenance, he was restless at night, and he had been for some time out of work. I gave him an opiate pill for a few nights; he slept well, and quickly lost the pain. He told me that, the first attack of pain, like the last, had come on when he was anxious on account of being out of work; I therefore concluded, as he did, that both attacks were of the same nature. He agreed with me, too, in the opinion, that the opiate treatment had been much more successful than the antiphlogistic measures which were adopted on the first occasion. It scarcely need be said, that many pains in the loins are quite unconnected with nephritis, and that, on the other hand, the kidneys may be acutely inflamed without a complaint of severe pain in the back. In all cases of the kind, a microscopical and chemical examination of the urine is essential for accuracy of diagnosis.

[Next we have obstinate constipation, succeeded by painful diarrhœa. We have also palpitation of the heart during the day, resembling that form which exists in cases of anæmia and chlorosis. This form is independent of that connected with the distressing dreams to which these patients are liable. In such cases we should be careful how we rashly imply to the patient the existence of any organic affection of the heart. Such a statement would only retard or entirely prevent the recovery. Besides these, we have important affections of the nervous system; amongst these we may class epilepsy. Bodily disorders are frequent causes of epilepsy; irritations from worms or teething, excessive use of alcoholic liquors, disease of the cranial bones, passage of calculi through the ureter, the presence of specific fever poison in the blood, or from poisons arising from suppressed secretions, as of the urine or bile. For the most part, however, these are transient and curable, unless they depend upon some permanent organic affection.]

Passing on now to the consideration of those cases of epilepsy which owe their origin to influences acting primarily upon the mind, we find that they naturally divide themselves into two classes:—1st, Those which result from great terror, or excessive or sudden grief, and in which the first paroxysm usually comes on suddenly without being preceded by warning symptoms; and 2nd, Those which arise from the influence of continued anxiety, and which are preceded for a variable period by premonitory symptoms.

With reference to the first class of cases, I mentioned in my last Lecture, the chief causes of sudden shock or terror, which I have known to excite epilepsy. The most frequent have been the vision of a supposed ghost, witnessing a fit of epilepsy in another, or the sudden or violent death of another. One woman became epileptic from hearing of the death of an acquaintance; she immediately felt, as she said, a sudden

"turn and agitation," and within an hour she had a convulsive fit. One girl attributed her fits to the fright of hearing a knocking, which she imagined to be supernatural; and a delicate, nervous boy, who is now under my care, actually became epileptic from the shock of seeing a horse fall and break his leg. When epilepsy results from a sudden shock of terror, the first fit usually comes on immediately, or within a few hours after the shock has been received. The only exception to this rule which I have met with occurred in the case of a man whose history I have already given, who, after seeing the violent death of a child, continued to dream of the accident, and, at the end of two years, became epileptic. In this case there can, I think, be no question, that the shock of terror was the exciting cause of the disease, and that this influence was perpetuated and increased by means of the continual restlessness and the frightful visions by which the poor man was nightly harassed.

In the great majority of cases, when an attack of epilepsy has been excited by fright, the fits return and constitute a permanent disease. In only one out of eleven cases which originated in this way, and of which I have either notes or a distinct recollection, has there been a single paroxysm without a return. In one other case the fits continued to recur for a period of five years, then ceased, without any obvious cause, for a period of fifteen years, and after this were again induced by great anxiety. A comparison of a great number of observations would be necessary to ascertain in what proportion of cases epileptic convulsions which have resulted from fright have a permanent tendency to recur after the first paroxysm; it is certain that the proportion is a very large one. It is an interesting but a very difficult inquiry what, in this respect, constitutes the difference between epileptic convulsions which result from sudden and violent mental emotion, and those attacks which are excited by the irritation of teething, and more especially by some specific fever poison, or by suppression of urine. The last case of renal epilepsy which I saw, occurred in a boy who had about twelve violent fits of convulsion in twenty-four hours; he was relieved by cupping on the loins; he recovered from the renal disease, and has had no return of the convulsions, nor is it at all likely that he will. It is evident, from the history of such cases, as well as from cases of puerperal convulsions, that the occurrence of one, or of several, attacks of epilepsy is not in itself a sufficient explanation of the persistent tendency to a recurrence of the disease, which is often left when the first paroxysm has been excited by great and sudden fear. It appears probable that, in such cases, the original shock of terror leaves a permanent morbid condition of the brain, although the precise nature of the change escapes our observation. No one who has carefully examined the structure of the brain, can deny or doubt, that an organisation so wonderfully complex and delicate may undergo numerous changes which entirely escape our most refined means of investigation. One of the chief obstacles to the progress of mental and cerebral pathology has been, the tendency to attribute to the coarse morbid appearances in the brain and its membranes all the symptoms which may have existed during the patient's lifetime. It would not be difficult to extract, from published reports on the pathology of the brain,

descriptions of precisely the same morbid appearances in connexion with a history of symptoms essentially different in different cases. The cautious pathologist, while he notes every abnormal appearance in the brain, will admit that changes more important still, may entirely escape his observation. It is probable, that every thought, every sensation, and every movement of the body, is attended with some change in the texture and composition of the brain. No one expects to find traces of these living actions in the dead brain, yet such an expectation would appear scarcely less reasonable than the attempt to find, in any *post-mortem* appearance which we can recognise, the essential cause of mental derangement, delirium, or convulsions. "There are cases," to use the words of Dr. Gooch, "in reference to some disorders of the mind in lying-in women, in which observation of the disease throws more light on its morbid anatomy than its morbid anatomy on the nature of the disease; the living symptoms illustrate the dead morbid appearances better than the dead morbid appearances do the living symptoms."

It cannot be doubted, that many of the morbid changes which have been detected in the brains of epileptics are the consequences rather than the essential causes of the disease. We often have demonstrative evidence of the extreme vascular engorgement occasioned by the epileptic paroxysm; and it is not difficult to perceive that such a condition must be attended with serious risk of yet greater mischief. A short time since, I saw a footman, whose appearance, when he arose one morning, had excited great surprise among his fellow-servants. The conjunctivæ, eyelids, and other parts of the face, presented numerous spots and patches of ecchymosed blood. He told me, that, when he awoke, he found himself struggling violently, his mouth was bleeding, and, on examination, I found that the edges of his tongue had been injured by his teeth. He evidently had been seized with an epileptic fit, and the appearance of his face was sufficient proof of the degree of vascular congestion which that fit had occasioned. If the vessels within the skull had been ruptured to the same extent as those on the exterior, the result might have been a fatal apoplexy; yet this would have been no less a *consequence* of the epilepsy than was the subcutaneous ecchymosis. It is surprising that the epileptic paroxysms do not more frequently and speedily produce great and obvious structural changes in the brain than they ordinarily do. In one case which came under my observation, it is probable that the brain was seriously injured during the very first fit. A boy, five years of age, was terrified by a policeman, who threatened to take him to the station for making a noise. He ran a few yards, and fell in a fit at the door of his home. After he came out of the fit, the left hand remained numb and weak, and he occasionally complained of pain in the left foot. These symptoms continued and increased; the hand become so insensible, that a blow from his schoolmaster's cane gave him no pain; and the leg became weak, so that he slightly dragged it in walking. About six months after the first attack, he came home one day with a bruise on the temple, which was probably occasioned by his having fallen in a fit. On about three occasions after this, he was seized with convulsions when at home, and his mother believes that he sometimes had fits when in the

street. He often complained of headache, which increased towards the end of May, 1847. This was about two years after the first fit. I first saw him on the 31st of May; he was then insensible, with squinting; the face was flushed, and the scalp hot. He continued in the same state until the 5th of June, when he died.

On opening the head, the lateral ventricles were found to contain a large quantity of clear serum. In the tail of the right corpus striatum, there was a hard swelling, about the size of a small hazel-nut, which projected against the contiguous surface of the optic thalamus. When cut into, it presented a yellow colour, and had somewhat the appearance of firmly contracted fibrin. There can be little doubt that this indurated mass was the cause of the partial paralysis of the left hand and leg. It is not probable that it was in any way the cause of the epileptic fits, but more likely that it was a consequence of these; and the partial palsy which remained after the first fit of epilepsy renders it probable that the corpus striatum was injured during that convulsive paroxysm.—*Med. Times and Gazette, Sept.* 3, 1853, *p.* 233.

17.—ON CASES OF EPILEPSY ARISING FROM MENTAL ANXIETY.

By Dr. George Johnson.

[Dr. Johnson has previously described cases of epilepsy arising from sudden shock or terror. It is evident that when the disease arises from the above cause it must be much slower in its development. It is highly probable, however, that the nature of the disease is the same, produced by either cause.]

The epileptic disease which results from the shock of violent grief or terror, usually commences quickly after the occurrence of the shock, and is, in fact, unavoidable; while, on the other hand, those cases of the same disease which originate from over-work and anxiety, or from the influence of continued grief, are almost invariably preceded by a train of warning symptoms; and it is during this period of incubation of the disease that preventive treatment may be resorted to with a reasonable hope of success.

The sources of mental disturbance and anxiety which I have observed to terminate in epilepsy, have been grief on account of the illness, or death, or misconduct of relatives and friends, loss of money, failures and disappointments in business, and, among the poor, over-work or insufficiency of work, with its attendant anxiety and low diet. In two of the seventeen cases to which I have referred, anxiety was combined with intemperance; but I have retained them in this class because mental anxiety appeared in both cases to be the most powerful influence. The cause of the anxiety was in one case the loss of a large sum of money, and in the other excessive labour as a tailor. In the latter case the poor man had been working two whole nights without going to bed; he then took an extra quantity of drink, and was seized with a fit while in bed. He became a confirmed epileptic.

In a former lecture I alluded to the importance of distinguishing that form of delirium which results from the immediate poisonous influence of alcohol in the blood, from the delirium which may more probably be referred to the combined influence of the mental anxiety and the bodily weakness which result from the too free habitual indulgence in alcoholic drinks. It is equally desirable to make a similar distinction with regard to convulsive attacks. With reference to prognosis the distinction is a very important one. When an epileptic seizure has occurred during a fit of intoxication, it may never be repeated if the patient is careful to avoid the like exciting cause; but when a man who is sometimes intemperate and continually nervous and anxious has once been seized with epilepsy while he is sober, the probability that he will be visited by a return of the disease is very much greater than in the case of a convulsive fit which has been immediately excited by intoxication. We will exclude from our present consideration all cases in which mental anxiety is not either the only or the chief cause of epilepsy.

The symptoms which precede the full development of epilepsy are,—terrific dreams and visions, startings, talking, and sometimes screaming, during the hours of sleep; after which, a sense of fatigue in the morning, with pain, weight, or constriction in the head, loss of appetite, and weakness. These symptoms continue for a variable period,—sometimes for many months, but in other cases only for a few days before the occurrence of the first epileptic fit, which generally takes place in the night and during sleep. The nocturnal disturbances then continue, sometimes in an aggravated degree: and after an interval which varies from a few hours to many months, a second fit of epilepsy occurs, and so the disease is established.

It is needless to describe the well-known phenomena of epilepsy, or to advert to the blighting influence which the disease exerts upon the noblest faculties of the mind. My object is to direct attention to the premonitory symptoms, and to insist upon the importance of arresting the progress of these before the occurrence of the first epileptic paroxysm.

I must here guard against a possible misconception. I do not maintain or believe that every over-worked or anxious man, who has unpleasant dreams, and who talks, or screams, or starts up in his sleep, will become epileptic. Such an opinion would be very unreasonable; but, expressed in the hearing of a nervous patient, it might contribute much to bring about its own verification. I do maintain, however, that any one whose sleep is habitually and for a long time disturbed in the manner described, is in danger of incurring some serious form of nervous disease,—it may be epilepsy, or it may be an outburst of delirium or mania, or a sudden attack of partial paralysis, or that more gradual decay of all the cerebro-spinal functions to which the term "general paralysis" is applied. Some one or other of these terrible maladies may result from the long continuance of excessive labour and anxiety by day, with restlessness and terror by night. The object of treatment in such cases is obviously two-fold: 1st, To remove the cause, when that is possible; and, 2nd, To combat the earliest effects, with a view to prevent the occurrence of more serious disease.

Respecting the means of accomplishing these objects I shall speak more particularly hereafter; but it may be observed here, that, when our treatment is most successful, we cannot know the full extent of benefit which we have conferred upon our patient. We cannot tell in what proportion of cases the milder symptoms of nervous disorder would have passed into epilepsy; but that they would have done so in many cases there is much reason to believe.

One of the worst cases of epilepsy from over-work which I have met with is that of a boy, R. M——, who is at present an out-patient at the hospital. The disease commenced about five years ago, when he was 13 years old. Before that time, he was very intelligent, of a rather excitable temperament, with light brown hair, and a fair, clear skin. He was employed as a reader in a printing-office, and he worked at this occupation about ten hours a-day, in a hot room. For about a month before the commencement of the epilepsy, he often complained of feeling tired and stupid, and he suffered from headache. At the same time, too, his parents observed that he talked much in his sleep, and occasionally walked about the room in a state of somnambulism. At length he was seized with a very violent fit in the night; and, after a few days, he had a second fit. The fits have frequently recurred from that time. He sometimes has two a week; but occasionally he has been free from fits for two or three weeks at a time. He was soon obliged to resign his employment as a reader; his memory became impaired, and he cannot now read without feeling confused. His parents are healthy; there is no hereditary tendency to nervous disease. Now, it is probable that a week's rest from his work, or a shortening of his day's labour during the month in which the warning symptoms of mischief presented themselves, might have saved this poor boy from the terrible disease under which he continues to suffer.

The great importance of a careful attention to the earlier symptoms of mischief resulting from over-work and anxiety, will be apparent from an analysis of a given number of cases of epilepsy with reference to the nature of the exciting cause. It is better to exclude from consideration cases of renal epilepsy, of infantile convulsions, and of convulsions during the early stage of the acute specific diseases, as, *e.g.*, small-pox. The reason for excluding these cases is, that they are all temporary, except those which result from chronic renal disease, and these are, in most instances, quickly fatal. Excluding these cases, then, I find, on comparing the histories of 37 cases of epilepsy, that in 11 cases the fits occurred after some sudden grief or terror, in 17 cases mental anxiety was the cause, in 5 either bodily disease or intemperance, and in 4 cases the cause could not be ascertained, there being no history of mental shock or anxiety, nor any evidence of bodily disease or of intemperance. It appears, therefore, that a large majority of the cases of permanent, incurable epilepsy, have their origin in mental influences; and that of 28 cases so originating, 17 were produced by the comparatively slow operation of anxiety from various causes. I have before stated, that in two of these cases the influence of intemperance was added to that of mental anxiety, and the following case is an illustration of another combination of causes.

F. H., a female, aged 41, came to the hospital in February, 1851,

and gave me the following history of a former illness. About sixteen years ago, a few hours after the birth of her second child, she observed her attendants whispering to each other, and in reply to her inquiry what it meant, they told her that her husband was dying. He had been suddenly seized with a dangerous illness at her mother's house, which was a mile distant. Her husband eventually recovered, but her anxiety was intense for several weeks, and in about a month after her confinement she was suddenly seized with a fit, during which she nearly bit her tongue in two. Her medical attendant bled her, and she had three more fits on the same day. From that time she continued to suffer from the fits, sometimes having four in one day, and never being a week free from them, until the expiration of two years from their commencement, when her medical attendant gave her every night and morning, for a few days, a dose of castor oil and turpentine. The result was, that she brought away about forty round worms, and from that time she has not had a single fit. She had often passed worms of the same kind during the two years preceding the commencement of the epilepsy, but she never had a fit until she was subjected to the intense mental anxiety. After this, however, it appeared, that the worms had perpetuated the the disease until they were expelled. Her doctor, she said, told her that the fits had been caused partly by fright and partly by the worms. Her story was a very consistent one, and I have no doubt as to its substantial accuracy. She came to the hospital on account of nervousness and restlessness, from which she always suffers when she is anxious, but she has had no return of the epilepsy.

The preceding case is very similar in its general features to one which has been recently published by the late Dr. Graves. The two cases are confirmatory of each other, and both convey an important practical lesson. The case to which I refer was communicated to Dr. Graves by Dr. Harvey. "A young gentleman at a boarding-school lost his brother, who died rather suddenly. This event gave rise to intense grief, which occasioned convulsions, occurring so frequently that the boy was obliged to leave the school. It was soon found that regular epilepsy had been developed, and in a severe form. Various remedies were exhibited, but in vain, for several months, when it was judged expedient to try the effects of oil of turpentine. After it had been used for a few days it unexpectedly acted as a vermifuge, and expelled a tape-worm, from which time the epilepsy never re-appeared." Such is the report of the case, to which Dr. Graves adds the following brief commentary:—"Here, then, we have an instructive example, proving that a source of irritation may exist without producing sympathetic disease, but yet capable of keeping up nervous symptoms when the latter have been caused by other agencies."

It has been before observed, that cases of epilepsy which result from obvious bodily disease, are in most instances curable when the original disease is remediable. It appears, also, that when some bodily disease or irritation of a temporary and removable character has concurred with mental anxiety to produce epilepsy, the prognosis is less unfavourable than when the epilepsy has been occasioned by purely mental influences. The only case of this kind which has come under my own observation,

and in which there has been a complete cure, is the one whose history I have just now given. I include that case in the list of seventeen to which I have before referred as resulting from mental anxiety. The remaining sixteen are, so far as I know, uncured. I may remark, however, with reference to this point, that I lost sight of two of the cases quickly after the occurrence of the second fit in each case; so that, although the prognosis was unfavourable, I have no knowledge of the actual results of these cases. In another case, after the first epileptic seizure had been quickly followed by a second fit, there has been no recurrence of the disease for, I believe, more than a year. It is, however, well known that such a patient cannot as yet be considered safe. The history of one case, which is still under my observation, will illustrate this.

H. C——, aged 51, pianoforte maker, a very intelligent and a very temperate man, with a remarkably fine and powerful bodily frame, after suffering much from anxiety consequent upon pecuniary difficulties and excessive labour at his business, had an epileptic fit on the 19th Nov., 1851. On the 28th December he had two fits of the same kind. After this he had no return of the disease until the 8th February, 1853, so that there was an interval of fourteen months. Then again he had another fit only eight days afterwards—on the 15th February; and another on the 9th of the present month (April). The irregularity of the intervals between epileptic seizures, and the difficulty of deciding when a patient who has become epileptic under the influence of mental emotion can be considered as actually safe and well, are known to every practitioner. It will frequently be found on inquiry, that when a paroxysm of epilepsy occurs after a long interval there has been some fresh exciting cause, or a repetition of the original cause,—some shock of fear, or grief, or anxiety, or anger, acting through the mind, or some unusual fatigue or attack of sickness disturbing and weakening the body. The practical inference from these facts is obvious. I mean, that a patient who has had one or more epileptic seizures should be most carefully guarded against every influence which, whether acting primarily upon the mind or upon the body, endangers a return or a continuance of the disease.

The history of every *cure* of confirmed epilepsy possesses some degree of interest. I am therefore induced to give a few particulars of one case which I have not included in my list of seventeen arising from mental anxiety.

L. G——, aged 40, a butcher, came to the dispensary on the 20th February, 1852, complaining of nervousness and restlessness,—the result, it appeared, of anxiety occasioned by his having been out of employment. He stated, that, about six years before, he was for three months subject to epileptic fits, which he attributed to excessive eating and drinking. He had been in the habit of eating large quantities of meat, and he was frequently intoxicated. He sometimes had as many as three or four fits in one day. He was advised to drink less, and did so. About two months after the commencement of the fits, a large abscess formed near the anus. It was slow in maturating; but at length it was opened; and from that time he has had no fit of convulsion. The

abscess occasionally closed and opened again, and it did not finally close for two years. I cannot vouch for the accuracy of this history; but the patient himself appeared quite confident as to the facts. The case affords support to the doctrine of the humoral origin of epilepsy which has been so ably advocated by Dr. Todd.

That epileptic convulsions frequently result from poisonous materials in the blood is as clearly demonstrated as any pathological fact can be. Take, for example, the convulsive attacks which are produced by prussic acid, or by an accumulation of urinary constituents in the blood. In other cases such a cause is in the highest degree probable, as, *e.g.*, when convulsions precede the eruption of small-pox. Again, there are other cases in which it is certain that the blood is abnormal in quality, although it may be impossible to demonstrate the precise nature of the deviation from the normal state; as, for instance, in a case of gluttony and drunkenness, like the one to whose history I just now referred; and, on the other hand, in that numerous class of cases in which continued anxiety and restlessness are associated with a defective appetite for food, and great impairment of the digestive powers. The cases of epilepsy in which the probability of a morbid state of the blood being the essential cause may at the first view appear to be least, are those which are suddenly induced by terror. But, as there is no *à priori* improbability that the character of the blood may be quickly altered by terror, so there are some facts which cannot well be explained, except on the supposition that the blood is in some way changed by violent mental emotion. I allude to the well-known influence of mental emotion upon the various secretions, and particularly upon the secretion of milk, as tested by the sensitive stomach and nervous system of a sucking infant.

The immediate effect of mental anxiety, or grief, or anger, in the nurse upon the infant at the breast is well known, not only by every practitioner, but by every mother. I have repeatedly been told by nursing mothers, that when they are very anxious, their infants invariably have green stools, and suffer from griping. On one occasion I attended an infant which had been in good health until the mother was rendered intensely anxious by her dissipated husband staying out all night; the infant, on the following day, was griped, had green stools, and a fit of convulsions. The man returned; the mother's anxiety subsided, and the child quickly recovered. The most remarkable case of this kind is quoted from a German author, by Dr. Carpenter, in his 'Principles of Human Physiology:'—"A carpenter fell into a quarrel with a soldier billeted in his house, and was set upon by the latter with his drawn sword. The wife of the carpenter at first trembled from fear and terror, and then suddenly threw herself furiously between the combatants, wrested the sword from the soldier's hand, broke it in pieces, and threw it away. During the tumult, some neighbours came in, and separated the men. While in this state of strong excitement, the mother took up her child from the cradle where it lay playing, and in the most perfect health, never having had a moment's illness; she gave it the breast, and, in doing so, sealed its fate. In a few minutes the infant left off sucking, became restless, panted, and sank dead upon its mother's

bosom. The physician—who was instantly called in—found the child lying in the cradle, as if asleep, and with its features undisturbed; but all his resources were fruitless—it was irrecoverably gone."

Such an event could hardly, as Dr. Carpenter observes, be regarded as a simple coincidence, if it were not confirmed by numerous other facts of a less striking character, but equally decisive. There can, I think, be little doubt that the effect of mental emotion in modifying the secretions is consequent upon some previous change in the blood itself. This explanation is certainly more consistent with other facts and with analogy than is the supposition, that the modified secretion results from some direct and immediate influence transmitted through the nerves to the gland itself or to its secreted products. One of my Dispensary patients, a boy about fourteen years of age, had a fit of epilepsy after the violent excitement of a quarrel with one of his fellows. Now, it is certainly not unreasonable to suppose, that this boy's brain was poisoned by some noxious modification of his blood, similar to, if not identical with that which, in like circumstances leads to the secretion, by the mother, of milk so poisonous in its character, that it either quickly kills, or convulses, or gripes her sucking infant. The green stools, and the griping thus induced, are not distinguishable from the same symptoms occurring as a consequence of the mother eating some kinds of vegetables, such as cabbage. She may or may not be inconvenienced by such diet; but the more delicate stomach of her infant will often prove, by its derangement, that some injurious material has passed through the mother's blood into the secretion of the breast.

There is not wanting even direct chemical evidence of changes in the composition of the secretions effected by the agency of the nervous system. Bernard has shown, that when the medulla oblongata of the rabbit is irritated by the insertion of a fine needle, the urine of the animal quickly becomes saccharine, and that the secretion of sugar continues so long as the irritation of the brain remains. Whatever may be the precise *modus operandi* of the cerebral influence, there can be little doubt that the kidneys only secrete or separate the sugar which is conveyed to them by the blood. They probably have no share in the formation of that material. This is a very striking illustration of a change in the vital chemistry of the blood and of the urine affected by nervous influence. The experiment in question is confirmatory of an opinion entertained by many pathologists, that *diabetes* in the human subject may be induced by over-work and anxiety. I have myself no doubt that this opinion is correct, and within the last few months I have seen two cases of diabetes, the origin of which appears to be clearly traceable to such influences. Another fact which has an important relation to the same subject is the influence which opium frequently has in lessening the quantity and the density of the saccharine urine secreted by diabetic patients. This fact appears, indeed, to be the counterpart of Bernard's experiment. If irritation of the brain of a rabbit by a needle, or of the human brain by mental anxiety, will lead to the secretion of sugar by the kidneys, it is not difficult to believe, that the soothing influence of opium may, in some degree, counteract that particular effect of cerebral irritation.

Returning now to the pathology of epilepsy, it seems reasonable to suppose that, however diverse may be the remote causes of the disease, the proximate cause of the epileptic paroxysm is similar in every case. It is certain, that in a large proportion of cases a morbid state of the blood is associated with the disease, and is, in fact, the essential cause of the convulsion. And lastly, while there is some degree of *à priori* probability, that mental emotion causes epilepsy, through a change effected in the composition of the blood, there are some well ascertained facts which afford positive evidence as to this mode of operation. In fact, it is probable that a fit of anger, or of sudden and violent grief, or terror, may generate in the blood a poison which is sometimes as quickly fatal as a large dose of prussic acid, and which is almost identical with that compound in its mode of operation. In discussing a subject of such acknowledged difficulty and obscurity as the pathology of epilepsy, hypothesis must sometimes serve as, at least, a temporary substitute for demonstration. We have only to be careful not to maintain our favourite hypotheses after they have been shown to be inconsistent with actual facts. It scarcely need be added, that, to use hypotheses with caution, and to abandon them when they have served their purpose, or are no longer tenable, is not only a rule of true philosophy, but also a solemn obligation of duty on the part of every one who proposes to found upon hypothetical opinions, rules for the practical guidance of himself or others.

I have before referred to the subject of *delirium*, as being one of the consequences of mental anxiety, under which term I include those mental states, which result from grief, over-work, and an over-anxious care for the future, or a dread of ill consequences. In my third lecture, I gave the history of a poor man who was rendered delirious, and, at a subsequent period, epileptic, by continued grief and anxiety, consequent on the misconduct of his wife. The delirium in that case is a good example of the kind of delirium which is sometimes occasioned by intense anxiety. This form of delirium rarely, if ever, occurs without being preceded by some warning symptoms. In this respect it resembles the epileptic disease, which is often induced by similar influences. The warning symptoms, too, are of the same kind. The patient's sleep is disturbed by frightful dreams, which he may remember and speak of with dread during his waking hours, or which may be known to occur only by his being heard to talk frequently, or to moan or scream, during his sleep. When he is talking in this manner during sleep, he will sometimes answer questions as if his faculties were quite alive; but when he awakes, he may have no recollection of what he has said or heard. At other times, he appears while sleeping to be carrying on a conversation with some person whom he imagines to be present. I was once told by a very intelligent woman, whose husband eventually became insane, and died in an asylum, that he was of what she called "a very close disposition," so that he would never willingly speak of his troubles to her or to any one; but, whenever he had been unusually worried, he talked so much in his sleep, that she learned from him then, not only the fact of his being anxious, but also the particular cause of his anxiety.

The transition from a state of sleeping delirium to delirium in the

waking condition is sometimes rapid. An intermediate stage appears to be that in which a man starts up in a state of terror and confusion, looking about him and sometimes talking wildly, and recovering complete consciousness only after being frequently spoken to, and roused by being touched or shaken. In some instances, the excitement on first awaking is accompanied by a more or less strong and durable temptation to commit suicide, or to do violence to others; and the patient will afterwards describe these feelings as most distressing and terrible. The symptoms which I have described, if permitted to continue unchecked by treatment, may be quickly followed by an outburst of maniacal delirium, or by an epileptic seizure, and sometimes, as I have seen in two instances, by both these consequences in succession. In no case whose history I have investigated has an outbreak of delirium occurred without being preceded, for a longer or shorter period, by some of the warning symptoms to which I have referred. I have sometimes heard and read of men becoming suddenly delirious or mad without any warning and without any appreciable cause. I have never seen such a case in practice, but I have met with more than one case which, without a careful examination, might have passed for such,—cases in which there was a deep and abiding cause for anxiety, which was never revealed even to the nearest friend or relation until it was made known after it had wrought irreparable mischief in the mind and body of the patient.

One case of this kind presented itself in a clergyman, who was possessed of a powerful mind and body, until he suddenly became insane, and subsequently epileptic, when little more than thirty years of age. His habits were strictly temperate, but he was perhaps over-anxious about his work and the results of his labours. His wife observed that his appearance and manner were changing; he became unusually reserved, and sometimes irritable; in other respects, too, his conduct was strange. He was at a distance from all other members of his family, and his anxious wife had no suspicion either of the real cause of the change which had come over him, or of the further consequences which were threatened. At length he became suddenly and furiously delirious in the middle of the night. The mental disease continued, and became complicated with epilepsy, and, after nearly four years of suffering, he died. Now, the cause of all this mischief was not ascertained until the time for prevention had passed. His income was small, and insufficient for the wants of an increasing family; he was in difficulties on this account, but no one was aware of the fact until the state of his affairs was disclosed after his illness. He was naturally of a reserved, and perhaps, I might add, of a proud disposition; and he had concealed his difficulties from his wife, probably from an unwillingness to distress her by a knowledge of them. It scarcely need be added, that his own anxiety was rendered the more intense by this reserve, and by his not seeking that relief which might have been derived from such a free out-speaking of his troubles as would have enabled his family to assist him out of them, or to share them with him.

I could give the details of several cases, of whose history I have an intimate knowledge, in which consequences equally disastrous, though differing in different cases, have resulted from similar causes, and

especially from the influence of suppressed grief or anxiety, the cause for which has neither been known nor suspected even by the patient's nearest friends, until it has been brought to light after the onset of some terrible illness,—an attack of mania, or epilepsy, or paralysis.

Now, it is in the highest degree important that our attention should be alive to the true nature of these cases; and for this particular reason —that we may often be consulted by an anxious patient before his nervous system has suffered serious injury. He will be apprehensive of some bodily disease, and will come to us with a complaint of some of those symptoms which I described in a former lecture. He feels certain that his heart, or his lungs, or his kidneys, are in a state of incurable disease; and he begs to have our opinion upon their condition. We examine the organs, and we can detect no sign of structural disease, either in them or in any other part. We observe the patient's anxious appearance and manner, and, after inquiring for other sources of disturbance, we may often feel certain that all his discomfort has its origin in some mental influence. If, then, we express this conviction to the patient, in terms which must greatly depend on his circumstances and on the degree of our intimacy with him, we shall probably so far gain his confidence as to obtain from him a confession of trouble and anxiety, of which, perhaps, he had never before spoken to any one. Or, if he hesitate, as perhaps he may, to make a confessor of his physician, we may at least succeed in awakening his attention to the true source and nature of his sufferings, and so induce him to confide in some friend, and to unburden his mind, so far as this can be done, by giving "sorrow words." In this way we may often be instrumental in preventing the occurrence of diseases which, when once they are fully developed, are irremediable by any means which we can command; while on the contrary, an error of diagnosis—and particularly as to the origin of the patient's suffering—may be attended with very disastrous consequences, partly by confirming the patient in his fears as to the state of his bodily organs, and partly by suggesting a plan of treatment the very reverse of beneficial.

Before leaving this part of my subject, I will remark, that, when a patient has once been delirious or insane from the effects of mental anxiety, he is very liable to suffer from restlessness, or to have his sleep disturbed by frightful dreams and visions, if at any time his bodily strength be much reduced by illness or over-fatigue, or if he be exposed to any fresh source of mental worry. I have observed this particularly in the case of a poor woman, who has once been in an asylum, and who has several times since complained to me of the symptoms to which I have referred. On each occasion she has been quickly relieved by an opiate taken at bed-time for a few nights. In such cases, it is probable that the mere dread of a return of the disease is often a source of great anxiety. And the same observation is applicable to epileptic patients. One poor man told me, that he always sleeps soundly for a few nights after he has had a fit; and he explained the fact by the feeling of confidence which he has that there is then little reason to fear an immediate recurrence of the fits, which, at other times, he so much dreads, that he cannot sleep with comfort.

Among other consequences of long-continued mental anxiety, I have frequently observed a greater or less degree of that general impairment of all the functions of the mind and of the nervous system to which the term *general paralysis* has been applied. It has appeared to me, that the most frequent and powerful influences concerned in producing this state of body and mind are,—over-work or a deficiency of work, with the anxiety attendant upon it, an insufficient supply of wholesome and nutritious food, and the impure atmosphere of dwellings and workshops. The intemperate use—or, rather, abuse—of alcoholic liquors is by no means an essential cause, but a very powerful one when it exists; for it is an almost constant source of mental anguish, at the same time that it poisons the body and impairs its nutrition. The brief history of one case will serve as an illustration of this form of disease.

J. M—, aged 44, an upholsterer, came to the hospital on the 19th January, 1851. His mental faculties were so much impaired, that he could give no account of himself; but I obtained from his wife the following particulars of his history:—No member of his family had suffered from nervous diseases except his father, who was the owner and commander of an East Indian merchant-vessel, and who became insane, in consequence, as was supposed, of misfortunes and losses during one of his voyages. My patient had married about twenty years before; he had then a good business, and for some time went on very prosperously. About ten years ago he began to drink occasionally to excess, but not so as to interfere with his attention to business. He had always been of a somewhat nervous temperament, but the effect of his occasional intemperance was to make him much more nervous and anxious. About five years ago he lost the custom of a firm which had given him the greater part of his business. He now became very anxious and irritable; he could neither sleep nor eat, and about the same time he had some kind of fit, which was attributed to intemperance. His memory and intellect gradually failed; he drank less, but his limbs were so tottering and unsteady that he often appeared to be intoxicated when he was quite sober. This had an injurious effect upon his business, and on one occasion a large order was countermanded because he was erroneously supposed to be intoxicated when he received it. He was exceedingly distressed by this occurrence, as well as by the loss of two of his children, which occurred at a more recent period. This series of misfortunes had gradually impaired his health, and when he presented himself at the hospital the expression of his countenance indicated a state of childish imbecility, his memory had entirely left him, his perceptive powers were greatly impaired, he answered questions slowly and imperfectly, his speech was thick, and his gait tottering,—yet with all this his muscles were tolerably firm and well nourished.

I saw him several times after his first visit to the hospital. He remained in much the same condition until the 7th March, when, as I afterwards learnt, he became excited by the expectation to obtain some employment which was promised him, and apparently in consequence of this he was suddenly seized with a fit of convulsions. A medical man who was called in immediately took eight ounces of blood from the arm. After this he gradually became lower, and the convulsions, which were

accompanied or preceded by loud screams, returned frequently at intervals of about half-an-hour. He died on the following day, about twenty-seven hours after the first seizure. I did not hear of his death until it was too late to examine the body.

It is evident that the mental and bodily powers of this poor man were gradually broken down by an accumulation of injurious influences, all more or less connected with each other. It appears that his disposition was originally nervous, and that an occasional habit of intemperance was the first avoidable cause of disaster. He may have been tempted to this habit by his constitutional nervousness; but any temporary relief which he thus obtained was of course followed by an aggravation of the original evil, and so his descent commenced and continued until the final catastrophe. Great as is the physical mischief which is directly occasioned by an abuse of alcoholic drinks, there can scarcely be a question that as in this, so in many similar cases, the mental anguish which the drunkard experiences is not less powerful in its influence upon the nervous system; its action being primarily upon the mind, and secondarily upon the bodily instrument of the mind.

Besides the cases of general paralysis to which I have referred, I have occasionally observed some form of *local palsy* in connexion with intense mental anxiety. I do not now allude to cases of apoplexy and hemiplegia, which, however, I have certainly known to occur under the immediate exciting influence of distress and anxiety; but I refer more particularly to the partial loss of sensation in some of the fingers or other parts of the body—symptoms which are often a source of great discomfort and alarm to a nervous patient. I am ignorant of the proximate cause of these disordered sensations.

I have before stated, that some degree of impairment of vision is frequently complained of. In one case, a nervous man had been rendered intensely anxious by a change of his situation which he had expected to be for the better proving quite the reverse; he became very restless, and quickly lost the sight of the right eye without any outward change in the appearance of the organ; at the same time, too, the sensation of the upper lip on the same side became impaired. Before he came under my care, he had taken mercury without benefit. His health has since improved in other respects; but when I last saw him he had not recovered either his sight or the feeling in the lip.

A girl who was subject to occasional fits of hysteria, suddenly lost the sight of the left eye from the effects of hard work and anxiety. The pupil on the affected side was much dilated. She had a timid, delicate appearance, and a pallid skin. I gave her sulphate of iron three times a day, muriate of morphia at night, and an occasional dose of compound aloes pill. She quickly recovered her sight, and the pupil regained its natural size.

In the case of one woman, at present under my care, who has been much harassed and overworked, and who complains of the usual symptoms, disturbed sleep, etc.; one pupil is about twice the size of the other; but she declares that her sight is good, and equally so in both eyes.

It is needless to do more than make a passing allusion to the subject of

chorea as connected with mental influences. It is well known that scarcely any disease is more intimately connected with the emotions of fear and anxiety. Without doubt, some derangements of the bodily organs may concur in the production of chorea, and these must be regarded in conducting the treatment of the disease; but neither the pathology nor the therapeutics of chorea would be complete without due attention to mental and moral influences.

And, lastly, with reference to *hysteria*, it is unnecessary to insist upon the fact, that, notwithstanding the etymology of the disease, it is by no means limited to the female sex. There is not one of its characteristic symptoms which may not be fully developed in the male. It is a less frequent disease among men, for the reason, that the feeble constitution and the excitable nervous system which predispose to the hysterical paroxysm are less common in men than in women. The *globus* in the throat is the form of hysterical symptom which I have observed more frequently than any other in anxious patients, both men and women. It is always a distressing symptom, and it often alarms the patient greatly. The sensation is usually excited by some sudden emotion, and it may occur at any period of the day or night. In several cases, especially in men, it has been complained of only at night, and, in these instances, it has appeared to be connected with the unpleasant dreams by which the patient was nightly disturbed. The dreams and the hysterical globus have been cured by the same means.

One of the most remarkable cases of the kind was that of a man nearly 60 years of age, who came to the dispensary, and assured me, that, for the period of a year, he had scarcely passed a night without being disturbed by a frightful sense of suffocation, for the relief of which his son and daughter assisted him to the open window. He had no cough, nor any symptom of disease within the chest. His countenance indicated great anxiety, and he spoke of having been much troubled by circumstances, the nature of which he did not communicate. I ordered him to take five grains of the compound soap pill each night at bed-time. He came again at the end of a week, and told me, that, since taking the pills, he had slept well, and had not once been disturbed by the choking sensation which had so long distressed him. From that time I saw him no more; I therefore conclude that he had no return of the complaint. I have seen many cases similar, though less striking than this,—similar, both as regards symptoms and the results of treatment. It sometimes appears that local irritation of the throat excites the sensation of *globus* in those who are predisposed to it. When a very nervous woman gets a common sore throat, her distress and sense of suffocation are often quite out of proportion to the local irritation or swelling. One poor woman, who was very anxious, and much overworked, had a slight choking fit while swallowing some food, and afterwards she felt convinced that some substance had lodged in her throat. She went to one of the hospitals, where the house-surgeon passed a probang, but this rather increased the discomfort. She afterwards came to the dispensary, and told me her history. The mucous membrane of the fauces and pharynx was congested, but her intensely-anxious face and nervous manner, and her description of the *rising* in her throat, were the most significant facts. It

was not until after many days, and then very gradually, and with occasional relapses, that she escaped from the painful conviction that there was some solid mass actually sticking in her throat.—*Med. Times and Gazette, Sept.* 24, 1853, *p.* 315.

18.—*Case of Epileptic Convulsions cured by the Internal Administration of Chloroform.* By Henry Bowe, Esq.—[The patient in this case, now about one year and seven months old, had his first epileptic seizure when he was five months old. In spite of all remedies the fits gradually increased in frequency until his face assumed an idiotic expression. On the 7th of April, he first came under the care of Mr. Bowe, who prescribed various remedies, but up to the 20th of April,]

The fits increased rapidly, as many as eighteen occurred in one day, following each other in quick succession. In the short intervals between them he lay in a semi-comatose condition, for three days he took no nourishment whatever, and was evidently fast sinking from exhaustion. Seeing that everything done had failed to give even the slightest relief, I determined to give chloroform a trial.

I commenced giving it internally, in five-minim doses, suspended in mucilage, directing the mother, after every fit, to give a dose of the medicine. On visiting the child the following morning, the 21st, I found that he had slept almost continuously since taking the first dose, and that there had not been any fit. He was quite sensible when awakened to take his food or medicine, of which three doses had been given in the course of the previous day.

I directed the mother to continue the medicine three times daily, and frequently to give small quantities of beef-tea and arrowroot. From this date the child improved rapidly up to May 6th, on which day he was very fretful, and evidently suffering from the irritation caused by the teeth, which had nearly penetrated the gums. The dose of chloroform was increased to seven minims, and a purgative powder to be given twice a week, after which he was much relieved. I ceased to attend him on May 20th. He was then perfectly well, never having had a return of the fits since the first dose of chloroform was administered.

July 18th. I have this day seen the child; he continues in perfect health; has cut three teeth, and has not had any return of fits.

I am not aware that chloroform has hitherto been given internally in similar cases to the present. Of course, very little can be argued from a solitary case; but, perhaps, experience will prove that in convulsive affections, especially those of children, we have in chloroform a powerful remedial agent.—*Med. Times and Gazette, Sept.* 24, 1853, *p.* 323.

19.—TWO CASES OF TRACHEOTOMY FOR THE RELIFF OF EPILEPSY.

By Dr. John Charles Bucknill.

[In the first case, the patient, a single woman, aged 22, was admitted into the Devon Asylum on the 21st of April, 1852. She was almost an idiot,

and subject to severe epileptic fits; indeed, during their presence the degree of maniacal violence accompanying them could not be surpassed. Under these circumstances, it was resolved to try the effect of tracheotomy.]

The operation was performed on the 2nd of May last. The patient was put under the influence of chloroform. The opening into the trachea was made below the isthmus of the thyroid body, which was hypertrophied; the trachea lay at a great distance from the surface, in consequence of an hypertrophied condition of the sterno-mastoid muscles—a condition which I have frequently observed in those long subject to epilepsy. The incisions were made in a vertical direction. On recovering from the influence of the chloroform, the patient became so violent, that it was found to be impossible to retain the canula in the wound. After many ineffectual attempts to do so, and anxious not to lose the benefit of the operation on this account, I removed a semicircular portion of the trachea on each side of the incision, with the intention of establishing a fistulous communication without the aid of a canula. In the night she had a severe fit, the wound being plugged up with lint to prevent oozing. On the 6th she had two slight fits, not becoming as usual black in the face or frothing at the mouth during recovery. Since her admission *she has not had a slight fit before.* On the 7th and 8th she had three severe fits, the opening into the trachea having become obstructed with exudation. It was cleaned, and soon afterwards she had a slight fit. From this time up to the present date great difficulty has been experienced in keeping the fistulous communication open. The size of the sterno mastoid muscles and of the thyroid body make the fistula a long one. The incisions having been made parallel to the muscular fibres and across the skin folds, the tendency to close has been great. This tendency, after the failure of milder measures, has only been obviated by the use of potassa fusa. This escharotic has been used three times. During the time that the fistula has been closed by the slough thus produced, the patient has had two severe fits; after the the fistula has become open again, the fits have been slight. Since the operation has been performed the temper and conduct of the patient has undergone a great and remarkable change for the better. She is at times sullen, and at other times perverse; but her behaviour resembles the haughtiness of a self willed child rather than the extreme fury of epileptic mania, which had for so long a time been its characteristic. Her general health has improved. Up to the present time I think it a moderate and impartial estimate to say that since the operation her fits have declined fifty per cent. in frequency, and seventy-five per cent. in severity.

[The second case, a single woman aged 35, was admitted Feb. 2, 1848. Had been subject to epileptic attacks for seven years. Lately the fits had increased in number; they did not come on periodically, but several occurred about the same time. The character of the fits were severe.]

On the 20th of June, the operation of tracheotomy was performed. Chloroform produced so much irregularity in the respiratory movements, that it was deemed advisable to allow its effects to pass off before the operation was proceeded with. The incisions were made transversely,

and a large canula was placed in the trachea, just below the cricoid cartilage. Subsequently to the operation the patient has had seven fits; their character is entirely changed; there is not the slightest lividity of the face or frothing at the mouth. Each fit is recognised by a convulsive movement of the eyes, and by slight twitchings of the arms and facial muscles. The state of unconsciousness continues about half a minute, leaving behind a very moderate degree of stupor, which passes off in half an hour. In language current in the wards, "the fits flutter off." She is not only tranquil, but is cheerful and thankful for her improvement. The canula is kept in its place without difficulty, and the opening is free enough to permit the whole of the respired air being passed through it at the will of the patient.

On these cases I shall take leave to make a few remarks, surgical and medical. The first was certainly undertaken with little hope of a successful result. But under the aggravated circumstances presented by it, the operation appeared to be a justifiable *pis aller*. It has certainly ameliorated the distressing condition of the patient in a far greater degree than a cautious prognosis would have permitted one to hope for. The improvement of the patient's temper is a noteworthy occurrence; it is a change of no slight or doubtful nature, but obvious and decided. A fit has several times occurred, when the deep and narrow fistula has become almost closed by fibrinous exudation, or by a slough caused by the use of an escharotic. At such times the fits have their old character of apnœa and coma, and the patient has for some hours afterwards become violent. When the fistula became free the symptoms were ameliorated. These facts afford proof of the relation in which the phenomena stand to each other—a proof arrived at by the method of agreement and that of difference, and therefore logically complete. The surgery of this case, however, must be considered imperfect and unsatisfactory. It was an error to make the incisions below the thyroid body, and in a line with the axis of the trachea. This operation may be the best for the removal of foreign substances from the air passages when the opening is intended to be speedily closed.

In operations for diseased larynx it may be necessary to make the incisions low in order to remove them as far as possible from the seat of the disease; but for the present purpose the low operation is decidedly ineligible, on account of the great proneness which such wounds have to close.

Liston, writing on tracheotomy, states—"The union and cicatrization of such longitudinal wounds are soon accomplished; they close permanently in a few days, even after having been open for many weeks with a foreign substance interposed between their edges. The same obstacles do not interfere as in transverse wounds; on the contrary, every circumstance is in favour of rapid union."—(Elements of Surgery, p. 451.)

The operation for epilepsy supposes the necessity for the wound remaining permanently open, inasmuch as the cure of the disease is not attempted or expected; and the remission of its graver symptoms can only continue so long as the artificial opening remains free. Those incisions therefore will best answer this purpose which will remain open with the least trouble and the greatest certainty.

Another reason for preferring the higher operation is the depth at which the lower part of the trachea lies from the surface. This depth is always enough to increase the difficulties, but in epileptic patients the trachea often lies much deeper than usual, in consequence of the hypertrophied condition of the muscles in those parts. Influenced by these considerations, in the second case I made the incisions above the thyroid body and in a transverse direction, dividing the muscular fibres freely, and laying bare the trachea just below the cricoid cartilage. The main incision into the trachea was also made transversely, but from the middle of the lower edge a short downward incision was added. The result has been satisfactory. In the first case an imperfect supplemental inlet only was effected, and the respiration was but partially relieved during a fit. In the second case a full and sufficient passage was afforded for all the air required, and during the fits, the respiration is not impeded in the slightest degree.

Notwithstanding the relief afforded to both the above cases, and to several others which have been recorded, it is highly probable that in many cases of severe epilepsy the operation would fail from causes which have not hitherto been sufficiently examined. Where the symptoms of severe epilepsy depend upon spasmodic closure of the laryngeal opening, tracheotomy will probably afford all the relief which has been promised. If, however, severe epilepsy may occur independently of what is now called laryngismus, in such cases the operation will be resorted to in vain.—*Lancet, Aug.* 13, 1853, *p.* 137.

20.—*On the Treatment of Epilepsy.*—[After reviewing the several modes of treating this disease recommended by a great many authorities, the editor of the 'Association Medical Journal' thus sums up the existing knowledge regarding its pathology and treatment.]

1. Epilepsy is an assemblage of symptoms dependent on disturbance of the nervous centres, and which may arise from different causes; some of which operate directly, as injuries, or morbid growths; others through the blood, in the form of hereditary or acquired toxæmia; and others again by reflex irritation. Of these, we believe toxæmia to be the most frequent cause of the disease. The relation to epilepsy of osteophytic or other morbid growths pressing on or irritating the brain, remains to be determined. In some cases they may be the direct cause of the epileptic fits; but they may also, with at least equal probability, be regarded as originally arising from the same blood-disease as that on which the epilepsy depends. After their development, they will doubtless render the case incurable, by renewing the irritation on the occurrence of the slightest cerebral congestion.

2. It is absurd to expect a remedy for epilepsy, which shall in all cases cure it. Acting on the view of its being a blood-disease, we may perhaps hope one day to become acquainted with a medicine which shall be as efficacious in its treatment as cod-liver oil is in the treatment of phthisis. In the mean time, attention to hygienic rules, the proper maintenance of the secretions, and the mineral tonics, especially the salts

of zinc, with such occasional adjuncts as may be required by the circumstances of the case, must form our chief remedies.—*Association Medical Journal, April* 1, 1853, *p.* 283.

21.—*On the Use of Chloroform in a case of Infantile Convulsions.* By W. C. Williamson, Esq., Professor of Anatomy and Physiology in Owen's College, Manchester.—[The little patient in this case was about six weeks old. It had been brought up on artificial food. On the 29th April the convulsions first commenced, and they gradually increased in intensity, in spite of all remedies calculated to relieve the irritations upon which they might be dependent.]

Under these circumstances, since the child was rapidly sinking, Dr. Bardsley and myself determined to have recourse to chloroform. I commenced the use of it at nine o'clock on the evening of Friday, May 8th. The child was then in a violent convulsion, which had continued for several hours. I folded a thin muslin handkerchief into a hollow funnel-shaped form, and after dropping half a drachm of chloroform into the hollow cavity, I inverted it over the nose of the convulsed infant, holding it about an inch from the face, so as to allow a free current of air to reach the respiratory organs. In about two minutes the convulsion gave way, and the child went to sleep. The effect of the chloroform passed off in a few minutes, when it was again applied, and thus the child was kept quiet for some hours.

I soon found that by slightly releasing the infant from the influence of the chloroform, but without allowing the convulsions to regain their power, it was possible to give a supply of food, which was swallowed eagerly and with great facility. This alone was an important advantage gained from the chloroform, since previous to its administration the child was obviously sinking from inanition.

For some hours I administered the chloroform myself, but afterwards entrusted it to an intelligent nurse, who was instructed to apply it the moment the child exhibited any movements indicating returning consciousness. This treatment was continued without a moment's interruption, until nine o'clock on the subsequent Monday, when the use of the chloroform was suspended, the infant having been under its influence sixty hours, sixteen ounces having been used. Its appearance was now decidedly improved; its flesh more firm, and the sunken eye and livid countenance were exchanged for a much more healthy aspect. The convulsions exhibited no disposition to return, and up to the present period (May 30) the infant has enjoyed perfect health.

In this case I have not the slightest doubt that the chloroform was instrumental in saving the patient's life; I can scarcely conceive recovery to have been possible without its aid. No injurious effects, however trivial, appeared to accrue from its use, and I am satisfied that, if necessary, we could have employed it for a much longer period without evil consequences.

It is of course important to ascertain to what class of convulsive attacks this new remedy is applicable. In the present instance, though

the condition of the patient was masked at its commencement, in its latter stages the disease assumed the adynamic type. It is obviously in such cases that we should be most likely to obtain benefit from the combination of the stimulating and sedative properties of the anæsthetic agent. It is a curious circumstance that such a modified use of it as allowed of the action of the muscles of deglutition, was nevertheless sufficient to control the convulsions.—*Lancet, June* 11, 1853, *p.* 535.

22.—*Compound Anodyne Application in Sciatic Neuralgia.*—At the meeting of the Academy of Sciences in Paris, on April 16th, M. Poggiale read a memoir on the treatment of sciatic neuralgia. He proposed the following formula :—

℞.	Extract of belladonna - - - -	5. parts.
	Hydrochlorate of morphia - - -	0.4
	Ointment - - - - - -	16.
	Lard macerated with Stramonium leaves	0.16
	Essence of lavender - - - -	a few drops.

The ointment is applied by gentle and prolonged friction. The author related ten cases in which sciatica had been cured; all having been remarkable for the previous duration of the disease, the failure of the treatment previously employed, and the rapidity and persistence of recovery after the use of the application described above.

M. Poggiale believes that pain is a more important element in disease than is generally believed. In his opinion, it may be a powerful cause of disease, and may produce most severe symptoms. In many affections, pain is a predominant symptom, if indeed it does not constitute the disease; and on arresting it, the entire disease disappears. He also thought that it is too much the custom in the present day to prescribe simple formulæ. A combination of substances of similar properties often produces better effects than the employment of each alone in succession.—*Association Med. Journal, Sept.* 2, 1853, *p.* 779.

23.—CASE OF TRAUMATIC TETANUS SUCCESSFULLY TREATED BY CHLOROFORM.

By Dr. Frederick J. Lowes, Gosport.

[On February 21st, Dr. Lowes amputated the arm of a man who had, by accident, received the charge of a gun into the upper arm. The humerus was severely fractured, but the brachial artery was uninjured On the fifth day after the operation the suppuration had nearly ceased, and the wound was healing rapidly. During the day, however, he was seized with violent trembling, and the next day with pain in the back, like rheumatism. Two days after, he complained of difficulty in opening the jaws. A strong purgative was given, followed by a draught containing ʒj. of tincture of opium. Dr. Lowes proceeds:]

At one o'clock p.m., a message was brought me that he was dying.

I found that he had had several attacks of violent spasm, attended by a feeling of suffocation; viscid mucus was issuing from his mouth, and he was bathed in cold perspiration. I immediately removed the dressings, and applied a bread-and-water poultice to the stump, and then placed him under the influence of chloroform, likewise rubbing it down the spine, on the epigastrium, throat, and over the regions of the temporal and masseter muscles. This relieved him from the violence of the spasm, and he was able to open his mouth to the extent of nearly half an inch, when I administered half a drachm of the tincture of Indian hemp, made after the formula of Dr. O'Shaughnessy. The stomach instantly rejected this, when I gave him one drachm of Battley's solution of opium, in some sherry wine, and, an hour afterwards, once more placed him under the influence of chloroform, and ordered him an enema of castor-oil and turpentine, desiring that his legs and abdomen might be rubbed with turpentine. On my visit in the evening, I found the bowels had been relieved; but he had been unable to take any food, and the spasms had been very severe, causing him frequently to bite his tongue, which was not, however, much coated. I once more placed him under the influence of chloroform, and applied it externally as before; and once more tried the Indian-hemp, which his stomach rejected again directly. I therefore gave him half a drachm of the liq. opii in wine, and left two doses to be administered during the night, at intervals of four hours. The following day (March 17th) I saw him at seven a.m. Had had a restless night, dosing at times; but the spasms followed in such quick succession as to be constantly waking him. I placed him again under the influence of chloroform, and ordered him an embrocation, consisting of chloroform, extract of belladonna, and soap liniment, to be rubbed on the spine, throat, chest, and abdomen, several times a day, and repeat the liq. opii. Two p.m.—Has had several spasms, dosing in the intervals. Put him under the influence of chloroform, after which the jaws were separated about half an inch. Gave him beef-tea with a spoon. Ordered him an enema, composed of beef-tea, with castor-oil and turpentine, and the following pills:—

℞. Camph. gr. xij.; morph. acet., gr. ij.; quinæ disulph., gr. viij.; ext. hyoscyam., q. s. Ft. pil. viij.

Sumat unam tertiâ horâ quâque.

Nine p.m.—Spasms rather less; placed him again under the influence of chloroform; much difficulty in swallowing the beef-tea; bowels slightly open; gave him some wine.

[As a purgative 1 drop of croton oil and 10 grains of ext. coloc. co. were given. The patient continued to improve until the 29th March, a painful stiffness of the muscles only remaining. Dr. Lowes concludes:]

In this case I believe the chloroform to have been the most effective agent, as the spasmodic action was always lessened after its application. The Indian hemp did not appear to succeed, as it always induced vomiting. The patient derived much benefit from the croton-oil purging, and the nervous irritability seemed to be allayed by the combination of the morphia, quinine, and camphor. His pulse was not much affected by the disease, excepting during the paroxysms, and he had no difficulty in voiding his urine. The ligature came away on the twenty-third day.

I found it necessary frequently to visit this case, to see that my orders were carried out; and my best thanks are due to Dr. M'Kechnie, to whom I am much indebted for his able assistance. I was induced principally to use the chloroform, owing to a case of chorea of three months' standing, which came under my care about a twelvemonth since, being cured by it. The patient was a boy, about ten years of age, who was never at rest, day or night, from the constant twitching of his muscles, and, at last, lost all power in the lower extremities, so that I feared some lesion of the cerebro-spinal system had taken place; and, as all the usual remedies had been tried unsuccessfully, I determined to use chloroform; when, after applying it about three or four times a week to the spine and epigastrium for about a fortnight, the boy got perfectly well, and has had no relapse.—*Med. Times and Gazette, May* 21, 1853, *p.* 517.

24.—*Additional Experiments on the Excitability of Paralysed and Healthy Limbs by the Galvanic Current.* By Dr. R. B. Todd, F.R.S., &c.—In the summer of 1847, Dr. Todd submitted to the Society the results of experiments tried with the view of testing the accuracy of Dr. M. Hall's dogma, that limbs paralysed by lesion of the brain became more excitable than the healthy ones by the galvanic current, in consequence of an increased irritability of the paralysed muscles. The present communication comprises the results of experiments to determine the difference on the influence of the current according to its direction, and also to ascertain whether any real difference of physiological effect exists when the galvanic trough, or the magneto-electric or electro-dynamic machine, is used. Thirteen healthy individuals were subjected to experiment, and with the following results:—

1st. That the obvious physiological effect was produced only on completing, or on interrupting, the galvanic circuit.

2nd. That more vigorous contractions were excited on the completion than on the interruption of the circuit.

3rd. That the completion or the interruption of the direct current produced more vigorous contractions than the completion or interruption of the inverse current.

These experiments were made with a Cruickshank's battery, charged with very dilute sulphuric acid. The magneto-electric rotation instrument and the coil machine (electro-dynamic) were afterwards used, and it was found that the same effects precisely were produced, and the same variation in the intensity of the contractions according as the current was direct or inverse. Fifteen cases of hemiplegic paralysis, caused by lesion of the brain, are afterwards detailed. The results of the galvanic experiments on these cases were as follow:—

1st. That of the fifteen cases, in only three was there any approach to a greater excitability of the paralysed than of the sound limb, and that in two of these it was manifested only under the influence of the inverse current.

2nd. That in three of the cases both the coil machine and the battery

were used, and precisely with the same results; and that, in one of the cases, the coil machine alone was used, and with a result which corresponded with those obtained in similar cases by the galvanic battery.

3rd. That in each of the three cases in which a greater excitability existed in the paralytic limbs, the paralysing lesion in the brain was more or less of an irritative kind. In one case, the irritation was probably connected with an incipient process of cicatrisation.

4th. That in many of the experiments all degrees of galvanic power were used, and with no other difference than that of degree; the amount of physiological effect being exactly proportionate to the power of the galvanic stimulus.—*Med. Times and Gazette, July* 30, 1853, *p.* 124.

25.—*Delirium Tremens produced by Abstinence from Tobacco.*—Delirium tremens and its twin sister, traumatic delirium, are now so well understood to be dependent on asthenic irritability of the nervous system, that but one opinion prevails as to the principles which should regulate their treatment. Sudden disuse of accustomed stimulants is always to be deprecated, and, in the event of a patient of known intemperate habits coming under surgical treatment, especially on account of an accident, care should always be taken that he is not deprived of his wonted allowance of alcohol. There is, however, another very potent drug in but too common use among the lower orders, the probable effects of suddenly relinquishing which, have, we suspect, been too little considered, and respecting which the event of a case lately under the care of Mr. Curling, appears to offer a valuable hint to the practical surgeon. A withered old woman, a gin drinker and an habitual smoker, was admitted on account of a severe burn. Stimulants were from the first freely allowed her, and opiates administered, but in spite of them, she continued extremely restless, wandering at times, and quite unable to sleep. Her manner and aspect, indeed, much resembled those of delirium tremens. At this juncture, several days after admission, Mr. Curling ordered that she should be permitted to smoke. The salutary influence of the measure was soon apparent,—the woman became quiet and tranquil, and on the next night slept fairly. All tendency to delirium disappeared, and she afterwards progressed steadily to recovery. Prevention is, however, better than cure, and we cannot leave this subject without dropping a hint that, in relation to the prevention of such diseases as those under consideration, the predisposing causes of which are well known and removable, the conservators of the public health have very important duties to perform.—*Med. Times and Gazette, Aug.* 13, 1853, *p.* 167.

26.—*Chloroform in Delirium Tremens.* By Dr. Pratt.—Dr. Pratt has administered chloroform internally, with success, in two cases of delirium tremens. The first patient took four grammes in water, repeated every four hours; the second patient took a tea-spoonful of chloroform in water, followed, in an hour, by eight grammes of spirit,

æther. sulph. co., tinct. valerianæ, and four grammes of chloroform. A quarter of an hour afterwards the patient fell asleep, and awoke in three hours and a-half with his reason. Small doses of chloroform were subsequently administered from time to time.—*Med. Times and Gazette, August* 6, 1853, *p.* 148.

27.—CASE OF SEVERE CHOREA.

By Dr. Barclay, Medical Registrar to St. George's Hospital, &c.

[In this very violent case, it was for some time doubtful whether a fatal termination would not result. The remedies which seemed to incline the issue favourably, were the administration of chloroform and quinine suppositories. If chloroform, in cases of violent mental excitement, as mania, delirium tremens, chorea, &c., does not produce natural sleep after its effect passes off, the probability is that much more harm will result from its administration than good. It may, however, from its transient effect, be administered in some cases of cerebral excitement where the too persistent narcotics, as opium or morphia, cannot be given. The quinine was resorted to, to sustain the system, and restore its exhausted energies as a tonic. With these preliminary remarks, we proceed to relate the case.]

Susan H——, aged 16, was admitted into St. George's Hospital, under the care of Dr. Wilson, on February 23, 1853. She had been in service, and had been much worried by illness in the house, and overwork. No other cause was known for the occurrence of the symptoms of chorea, which had been gradually supervening during a fortnight or three weeks before her admission. She had had no rheumatism, and the heart was healthy. When received into the hospital, the spasmodic movements were not by any means violent, nor very constant; but there was great distortion of features, especially when she attempted to speak. She was ordered a strong purgative, and then directed to have six minims of Fowler's solution in pimento water, three times a day. The bowels were rather loaded, and much inclined to be costive, and the purgative was repeated on two or three occasions. She continued taking the arsenical solution until the 11th of March, and seemed, under its influence, to be gradually becoming quieter and steadier. She was rather out of sorts that day, and the arsenic was left off for a day or two.

The spasmodic movements now began to be more frequent and severe, and she was obliged to lie in bed. The sesquioxide of iron was given in doses of two scruples three times a day without benefit. Her nights became disturbed, and she used to scream out a good deal during the day. Seclusion had rather a calming effect upon her; and the bed was screened off from the rest of the ward, during which she used to have occasional short slumbers, but, for the most part, she was very restless; the expression of her face was rather wild, and the spasmodic movements constant and severe.

On the 17th, the bowels having been well purged, she was ordered to have a third of a grain of tartar emetic every three hours, and half a grain of acetate of morphia at night. This produced no sickness, and seemed partially to calm her; it was continued a second day, at inter-

vals of four hours. She had had no sleep that night, and was evidently no better; without being very violently tossed about, there was excessive restlessness and desire of movement; her face was much distorted, and the expression wild, and almost maniacal; and, as she sat upon her bed, with her legs drawn up under her, and her hair in wild confusion about her face, she looked much more like a proper inmate for Bedlam, than a person suffering simply from chorea, and the more so, because of her constant cries; but the nurse satisfied herself that she was free from delirium, and perfectly conscious on all occasions.

She had now passed the catamenial period, with no return of the menstrual flux. Her nights were sleepless, and a quarter of a grain of morphia was given every three hours to six times, but without benefit. She seemed to be gradually becoming exhausted by the constant jactitation and want of sleep. Wine had been given; yet the tongue was becoming dry and brown, the lips covered with sordes, and the pulse quick and feeble. Her aspect was distressed, and she was tossed about very violently by the spasmodic movements of the disorder.

On the 21st she was directed to inhale chloroform, and to have a suppository, with two grains of opium at once, and a draught with four grains of camphor, and some chloric ether every two hours. The first inhalation quieted her, but she awoke almost immediately after the first effects had passed off; it was not repeated till night, and, in the mean time, eight grains of quinine in suppository were ordered every hour for six times. She had some sleep after the second inhalation, and it was repeated the following forenoon. She was decidedly quieter, and the draughts and the suppositories, which had not been all given with perfect exactness, although very frequently during the night, were continued at intervals of four hours. The chloroform inhalation was again repeated on the evening of the 22nd. She slept pretty well after it through the night, and fell asleep naturally next morning, waking up to have her dinner, and almost immediately going to sleep again, and continuing to doze all day. From this time she continued to improve rapidly. She was still a little odd-looking in the face, and restless jactitations lasted for some time; but she gradually became steadier. On the 4th April she was ordered Griffith's mixture, and on the 15th was discharged recovered.—*Med. Times and Gazette, May* 28, 1853, *p.* 548.

DISEASES OF THE ORGANS OF CIRCULATION.

28.—ON SOME OF THE PRINCIPAL EFFECTS RESULTING FROM THE DETACHMENT OF FIBRINOUS DEPOSITS FROM THE INTERIOR OF THE HEART AND THEIR MIXTURE WITH THE CIRCULATING BLOOD.

By Dr. W. Senhouse Kirkes.

Communicated by Dr. George Burrows, F.R.S.

[That the blood may, in certain cases, deposit its fibrinous constituent upon some portions of the circulatory apparatus seems now to be an established truth. These may either be the globular excrescences of

Laennec, or the many varieties of warty growths adhering to the valves. That these masses may be dislodged during life is easily proved by a very slight force being, in many instances, necessary for their removal after death. Such being the case, it is also easily understood that the first vessel too narrow for their transmission must oppose an obstacle to their further progress; if from the left side of the heart, they will be arrested in any of the systemic ramifications, especially in those organs receiving a large supply of blood, as the brain, spleen, and kidneys; if from the right, they must necessarily be arrested by the minuter vessels of the lungs. First, on the effects of such an accident in the systemic circulation. The three following cases will show that softening of the brain was consequent on the blocking up of the main cerebral arteries by fibrinous masses, apparently derived from the left side of the heart:]

Case 1.—Margaret Shaw, aged 34, a pale, weakly-looking woman; admitted into St. Bartholmew's Hospital, under Dr. Roupell, about the middle of July, 1850, on account of pains in her lower limbs, and general debility. A loud systolic murmur was heard all over the cardiac region. No material change ensued in her condition until August 7th, when, while sitting up in bed eating her dinner, she suddenly fell back as if fainting, vomited a little, and when attended to was found speechless, though not unconscious, and partially hemiplegic on the left side. The hemiplegia increased, involving the left side of the face as well as the the limbs, and gradually became complete in regard to motion, while sensation seemed to remain unimpaired. She continued speechless and hemiplegic, but without loss of consciousness, for five days, when she quietly died.

On examining the body, six hours after death, the skull and dura mater were found natural; but the small vessels of the pia mater were much congested, the congestion amounting, in some places, almost to ecchymoses. The right corpus striatum was softened to an extreme degree, being reduced to a complete pulp of a dirty grayish-white tint, and without any remains of its characteristic striated structure. The corresponding optic thalamus was healthy; but a condition of pale softening, similar to that affecting the corpus striatum, existed also to a considerable extent in the posterior lobe of the right cerebral hemisphere. The rest of the cerebral substance of this hemisphere was softer than natural, and appeared to contain less blood than ordinary. All other parts of the brain were healthy. The right middle cerebral artery just at its commencement was plugged up by a small nodule of firm, whitish, fibrinous-looking substance, which, although not adherent to the walls of the vessel, must have rendered its canal almost, if not quite, impervious. With the exception of a speck or two of yellow deposit in their coats, the rest of the vessels at the base of the brain were healthy and filled with dark blood.

The heart was enlarged; on its exterior were several broad white patches of old false membrane. The right cavities and left auricle contained recent separated coagula; the fibrin firm and whitish. The right valves were healthy; so also were the aortic, with the exception of slight increase of thickness. The mitral valve was much diseased, the auricular surface of its large cusp being beset with large warty excrescences

of adherent blood-stained fibrin. There were a few scattered deposits in in the coats of the aorta. The right common iliac artery, about an inch above the origin of its internal branch, was blocked up by a firm, pale, laminated coagulum, which extended into the internal iliac, and for about a quarter of an inch down the external iliac, where it terminated rather abruptly. The lower portion of the coagulum was colourless, and softer and more crumbling than the upper, which was also more blood-stained and laminated. There was no adhesion of the coagulum to the walls of the vessels. No similar clot existed in the iliac vessels on the opposite side. The pleuræ were adherent in places; the lungs œdematous, and in places solidified by compact grayish-white masses, such as might result from uncured pneumonia. The pulmonary vessels were free from old coagula.

The liver and intestinal canal were healthy. The spleen was large, pale, and soft. One large portion, about a fourth of the organ, was converted into a mass of firm, yellowish-white, cheesy substance. The kidneys were pale, rough, and granular. Within the cortex of the right were several large masses of yellow deposit, surrounded by patches of redness. The portions of medullary structure passing to these deposits were compact, dryish, and yellow.

In the case just narrated, death evidently resulted from softening of a large portion of the right side of the brain; and the cause of this softening appeared to be an imperfect supply of blood, consequent on the middle cerebral artery of the same side being obstructed by a plug of fibrin within its canal. I am not aware that there has yet been recorded a case in which fatal softening of the brain resulted from a cause like this; therefore in itself this case is one of value. That the existence of the fibrinous coagulum within the cerebral artery was the real cause of the changes in the brain, can, I think, scarcely admit of question. The sufficiency of such an obstruction to produce the effects ascribed to it is fully established by the many instances in which disturbance, or complete arrest of function in a part, with subsequent atrophy or disorganization of its tissue, results from any circumstance which materially impedes or entirely cuts off its supply of blood. Examples of this kind at once suggest themselves;—such as the weakened and subsequently degenerated heart, when the coronary vessels are diseased by deposits in their coats; the feebleness, atrophy, or even gangrene, ensuing in the whole or part of a limb whose arteries are similarly diseased, or obstructed from any other cause; also the impairment of cerebral function and subsequent softening of the tissue of the brain when the cerebral vessels are much diseased. But perhaps the best illustration bearing on the case in question is afforded by the results sometimes observed after ligature of one of the common carotid arteries. Such an operation is not unfrequently followed, almost immediately, by giddiness, loss of speech, and unconsciousness, which may pass on even to fatal coma. When not thus speedily fatal, hemiplegia of the side opposite to that of the ligatured artery may ensue, and death may occur from that cause at a more remote period, while examination after death discloses a greater or less amount of disorganization, amounting sometimes to gangrene, in the cerebral substance, especially on that side on which the operation was performed.

[In this case the fibrinous material had evidently been arrested at the angle whence the middle cerebral proceeds from the carotid. In the second case related, the results were so similar that it is scarcely necessary to relate the case. In the third case, the patient, William Purdy, aged 24, was admitted into St. Bartholomew's Hospital, on January 22, 1852. His legs and feet were much swollen, and a harsh systolic murmur was heard at the apex of the heart, fading towards the base, where the second sound was clear. He had previously had rheumatic pain in the joints. About a fortnight after the cardiac symptoms had manifested themselves, he was seized with an apoplectic attack, and, on admission into the hospital, there was loss of motion over the whole of the left side, though sensation was not much impaired. Nutritious diet and wine were administered, under which he seemed to rally for a short time, but he died ten days afterwards.]

An examination of the body was made twenty-eight hours after death. The emaciation was considerable. The lower limbs remained œdematous, especially the left, the foot of which was of a dark, livid colour. The tissues generally were very pale, especially about the scalp. The skull was pale and light. The membranes of the brain were healthy, but pale, while there was a considerable excess of clear fluid in the cavity of the arachnoid and the tissue of the pia mater. The vessels of the pia mater were unusually deficient in blood, almost empty. The substance of the brain was remarkably pale, soft, and watery in every part; there was no trace of a clot, or any manifest product of inflammation. Impacted within the right middle cerebral artery, just at its origin, was a firm plug of pale fibrinous substance, about the size of a hemp seed, completely blocking up the canal of the vessel, while the branches immediately beyond the obstruction were narrow, but filled with dark stagnant-looking blood, which had quite a different character to that in the other cerebral vessels. There was no trace of any disease in the coats of the cerebral arteries, and no obstruction in the left middle cerebral. Within the left lateral sinus was a large mass of old dryish colourless fibrin, somewhat adherent to the lining membrane, which was spotted red. A piece of similar fibrin existed also in the left internal jugular, but not connected with the mass in the lateral sinus. The other cerebral sinuses and right internal jugular were free from old coagula. The pericardium was healthy within, but externally it adhered to the left pleura. The heart was about natural in size, but much diseased in its interior, the tricuspid, mitral, and aortic valves being encrusted over with large, firm, warty vegetations. On the tricuspid valve these growths were attached along the auricular surface, just above its free border. They varied considerably in size and number at different parts of the valve; many of the masses consisted of small compact roundish or oval bodies about the size of hemp-seeds, or bigger, attached singly or in clusters to the edge of the valve and to the tendinous cords to which they more or less tightly adhered. In structure they were firm and solid throughout, of a yellowish-white colour, and evidently composed of a dense fibrinous substance. The free border of the mitral valve was thickly studded with a continuous ridge of rough cauliflower-like masses of firm white fibrin, which formed warty excrescences of various

sizes and shapes. One mass was nearly as big as a hazel nut, firm, elastic, and solid throughout, and of a mottled yellow and red colour on section.

The aortic valves were studded by a similar crop of smaller warty vegetations. Lying loose in the cavity of the ventricle were several small brownish nodules of old bloodstained fibrin. The muscular tissue of the heart was generally healthy; but just beneath the lining membrane of the left ventricle, and occasionally deep within its substance were numerous pale yellow or buff-coloured blotches and streaks surrounded by red borders, and having the general appearance of the changes described under the term of capillary phlebitis. The coronary arteries were healthy; so also was the general arterial system, though the aorta and its main branches were very narrow. The principal venous trunks contained recent coagula, but the two external and internal iliac veins, and both femoral veins were blocked up by old variously-discoloured masses of firm, friable fibrin. These old coagula were very large, and produced great distension of the veins in which they occurred. There appeared to be no disease of the coats of the veins, and the coagula were nowhere adherent to them; and the arteries leading to the lower extremities were free from old coagula.

There was nothing peculiar in the blood generally, The coagula in the right cavities of the heart presented quite ordinary characters. There were a few scattered pleural adhesions. The lungs were generally very œdematous; both lower lobes were consolidated by masses of fibrinous deposit, consisting principally of reddish-brown pulpy material, surrounded by darker portions composed of recently extravasated or stagnant blood. In some parts of the right lower lobe were several collections of greenish thick pus, the majority being about the size of peas, a few as large as a walnut. All the branches of the pulmonary artery leading to the lower lobes, were completely plugged up by old, firm, variously-coloured laminated coagula. The branches going to the upper lobes also contained old coagula, though these were softer, apparently of more recent date, and did not so completely block up the canals of the vessels. The pulmonary veins contained recent coagula. The liver appeared healthy, though pale; and there were no old coagula in any of the portal or hepatic vessels. The spleen was enlarged to about three times its natural size, and very dark from extreme sanguineous engorgement; its tissue was soft and pulpy, while within its substance were several variously-sized circumscribed masses of fibrinous deposit. These masses varied in colour from dirty brown, spotted with red, to bright yellow; and in consistence from that of a firm, friable cheesy substance, to that of a semi-fluid pulp. One of the collections of pulpy substance was contained in a kind of cyst bounded by the capsule of the spleen; at one point the capsule had given way, and a considerable quantity of the pulpy fluid was found in the peritoneal cavity, and smeared over the intestines. The absence of any signs of peritonitis makes it probable that the escape of this material had taken place either just previous or subsequent to death. There was nothing deserving particular notice in the state of the intestinal canal. The kidneys, though healthy in general structure, were the seat of numerous, large, yellow, fibrinous masses,

similar to those in the spleen. In the left, these masses were so abundant and large as almost to replace the entire structure of the gland. All the masses were firm and compact; many of them were surrounded by zones of redness. The main artery of this kidney, from the point of its entrance and along all its traceable subdivisions, was filled up by pale, firm, old fibrin. Similar, though redder, old coagula existed in the renal vein. There were no old coagula in the artery or vein of the right kidney, which, moreover, was much less diseased than the left.

In all essential respects this case closely resembles the two previously narrated. In each there was pale softening of the brain; a plug of fibrin obliterating the canal of one of the main cerebral arteries; masses of firinous deposit in the kidneys and spleen; and, which seemed to be the source of the mischief elsewhere, large, warty, fibrinous excrescences on the left valves of the heart.

So many, and yet such rare features of resemblance, cannot fail in demonstrating a very close connection between the several morbid appearances so exactly reproduced in each case.

Although in the autopsy of the last case it was not particularly noted that the right side of the brain, or any portion of it, was softer than the rest, yet the existence of hemiplegia on the left side, and the softening in each of the former cases being most marked at the parts supplied by the obstructed arteries, leave little room to doubt that in this case also, those portions of brain supplied by the right cerebral artery were more atrophied, though perhaps not manifestly much softer than other parts whose vessels were not thus obstructed.

Besides the existence of fibrinous vegetations on the valves of the left side of the heart, and the formation of fibrinous deposits in other parts freely supplied with blood by the left ventricle, it is worthy of particular attention that in this case there were also warty growths on the tricuspid valve, together with coagula in the pulmonary arteries, and masses of fibrinous deposit in the substance of the lungs. The importance of this fact, in support of the close and direct connection between deposits on the valves of the heart, coagula in the arteries, and fibrinous deposits in various organs, will be again noticed. At present I would allude to it merely in support of the view that the clot in the middle cerebral artery was in this, as in each of the other cases, directly derived from the vegetations on the left valves of the heart.

At first it appears singular that in each of these cases, as also in others I have had the opportunity of seeing, the clot should be found as nearly as possible in the same situation. But a glance at the arrangement of the arteries at the base of the brain, especially in an injected specimen, will make it clear that this point is, of all others, the one perhaps most likely to arrest a solid mass floating in the blood, transmitted to the brain by the internal carotid artery; for, almost directly after its entrance into the skull, the carotid divides into its two main branches, the middle and anterior cerebral, which immediately diverge in almost opposite directions. The sudden diminution in size, resulting from the division, and the different directions at once taken by the two branches, will together tend to make the angle whence the branches diverge well calculated to arrest any solid body transmitted along the carotid: while,

since of the two branches, the middle cerebral is the largest, and also maintains more nearly than the anterior the original direction of the trunk from which they both sprang, a solid body seems more likely to pass into it than into the anterior division. And such is found to be the case; for, if the plug is not found sticking directly at the angle, it is found a short distance up the canal of the middle cerebral.

Once arrested at the angle, or within the canal of the middle cerebral artery, a mass of fibrine, if large enough to block up the vessel, becomes at once the cause of loss of function and subsequent atrophy to almost all that portion of the brain supplied by the obstructed vessel; for, although by the arrangement of the vessels composing the circle of Willis, ample provision is made against obstruction ensuing in any of the main arterial channels of either side *previous* to their arrival at the circle, there is comparatively little provision for an obstruction ensuing in any of the main branches into which this arterial circle breaks up. This remark applies especially to the middle cerebral artery, which, if plugged up at its origin, becomes at once almost useless as a blood-vessel; for nearly all its divisions, especially those for the central parts of the brain, proceed to their several destinations without receiving any anastomosing branch from the other divisions of the circle of Willis. The truth of this will be evident on examining an injected brain: and the fact at once explains, why the portions of brain supplied by the branches of an obstructed middle cerebral artery, are deprived of all nourishment, except the little they may receive from the minute inosculations provided by the ultimate divisions of other arterial branches of the circle of Willis. The anterior cerebral artery is, by means of the anterior communicating branch, in great measure guarded against the occurrence of a similar evil; and in this way may be explained the infrequency of softening of the anterior cerebral lobes compared with the more frequent occurrence of this condition in the parts supplied by the middle cerebral artery.

I trust that the details of the three cases will be considered sufficiently satisfactory to establish the two principal points which I have been desirous of proving in this part of my communication;

Namely, *first*, that softening of a portion of the brain, with attendant loss of function, may result from obstruction of a main cerebral artery by the lodgement of a plug of fibrin within its canal;

And, *secondly*, that the foreign substance thus obstructing the vessel is probably not formed there, but is derived directly from warty growths situated on the left valves of the heart.

It has long been admitted that any disease of the cerebral arteries sufficient to impede the transit of a due quantity of blood may induce softening of the brain, from imperfect nutrition. But the diseased state of the vessels to which nearly all observations on the subject apply, have reference only to the peculiarly fatty or atheromatous condition so frequently presented by the coats of the cerebral arteries, especially in persons of advanced life.

It is probable, that many cases of partial and temporary paralysis suddenly ensuing, in one or more limbs, in young persons, especially if accompanied with signs of cardiac disease, may be due to interruption of

a due supply of nutriment to the brain by the temporary plugging up of a principal cerebral artery by fibrin detached from a diseased valve on the left side of the heart. Temporary loss of power in one or more limbs is not an uncommon circumstance in young persons affected with heart-disease.

[Having now discussed the effects of large masses of fibrin washed from the valves into the current of the circulation, Dr. Kirkes proceeds to describe those produced by smaller ones. One effect of these seems to be the formation of the fibrinous-looking substances sometimes found in the spleen and other organs, and known as 'capillary phlebitis,' 'metastases,' 'fibrinous deposits,' &c., but in all cases they result from the direct transmission of particles of fibrine from the valves of the heart, or elsewhere.]

Out of 21 cases in which I have observed these deposits in the spleen, kidneys, or other parts supplied with blood directly from the left side of the heart, and in which I have noted the condition of the heart and other principal organs, I have found disease of the valves or of the interior of the left side of the heart in every instance but two; and of these two exceptional cases, one was a case of cholera, in which a doubtful mass of capillary phlebitis existed in the liver, the other a case of aneurism of the aorta,—which tends rather to prove than disprove the explanation I offer of the fibrinous masses existing in the various organs. Omitting these two cases, however, I find that of the remaining 19 it is not merely stated that the heart or the valves were diseased in each of them, but that in 14 there were fibrinous growths on the surface of the left valves or interior of the left cavities, while in the remaining 5 there is simple mention of valvular disease, without any statement as to whether the fibrinous deposits existed or not. The mere fact of so large a number of cases of so-called capillary phlebitis in internal organs being distinctly associated with the presence of fibrinous material on the valves of the heart, is sufficient to suggest a very close relation between these two morbid states; and the existence of some such close relation is rendered more probable by the absence, in all these cases, of any other condition likely to have induced a poisoned state of the blood, to the existence of which the formation of these deposits has not unfrequently been ascribed. In many of the cases cardiac dropsy is noted as the fatal disease, while in none of them does there seem to have been any proof of the existence of a so-called blood-disease, such as typhus, purpura, or the like.

That such blood-diseases have, indeed, nothing to do with the deposits in question seems proved by the fact that, out of the examination of a large number of fatal cases of fever, I have never yet met with an instance in which masses of capillary phlebitis existed in any part of the body in this disease. From their general absence in other diseases, then, as well as from their frequent occurrence in diseases of the heart, we have equally strong reason for believing in the existence of a close connection between these morbid deposits in internal organs and the presence of fibrinous growths on the inner surface of the heart or on its valves.

The close connection subsisting between endocarditis and fibrinous deposits in distant organs has, I am aware, been strongly insisted upon by Rokitansky, and has also attracted the notice of Hasse; therefore it may seem superfluous to have said so much on the subject. But I would plead a twofold excuse for so doing: first, because, so far as I know, the connection pointed out by Rokitansky has never yet been confirmed, scarcely even recognised, in this country; and secondly, because I believe, with all deference, that it may admit of an interpretation somewhat different from that which Rokitansky has given. After careful and repeated perusal of all I can find bearing on this subject in Rokitansky's great work on Pathological Anatomy, I cannot find that he in any place even hints at the explanation I have ventured to offer of the real cause of the secondary deposits in distant organs in cases of valvular disease of the heart. His observations seem to show quite plainly that he ascribes them to a poisoned state of the blood, consequent on the admixture of the products of endocarditis with this fluid, whereby it acquires an increased tendency to coagulate, which tendency cannot well be manifested in the arteries, owing to the velocity of the current, but is brought about within the capillaries on account of the slowness with which the blood there moves, and the increased facility which is thus afforded for the morbid material derived from the inflamed heart to exercise its influence on the composition of the blood.

The view, however, which I have ventured to take is, that the deposits in the various organs are the direct mechanical results of the arrest of solid particles of fibrin detached from some part of the heart or arteries, and too large to traverse the minute capillary canals to which they are brought by the circulating blood. By the obstruction which their arrest occasions, they may induce coagulation of blood behind them; while, by their mere presence, they may act as local irritants, and so induce secondary processes of inflammation and suppuration, like any other foreign body. In either or both of these ways may be produced the various appearances characteristic of these singular deposits. This view,—which seems supported by the other evidence I have adduced of the direct transmission of masses of fibrin from the valves of the heart,—has the advantage, too, of explaining some of those cases in which very similar fibrinous deposits are found in various organs, independent of any warty or other growths within the heart. For example, in a fatal case of aneurism of the abdominal aorta, to which I have already alluded, several patches of capillary phlebitis existed in one of the kidneys, though for the origin of these there seemed to be no other explanation than that afforded by the existence of fibrin abundantly deposited in laminated masses within the sac of the aortic aneurism. It is easy to conceive that portions of such fibrin might be broken up, mingled with the circulating blood, and subsequently arrested within the capillaries of the kidney or spleen.

[Lastly, the principal points of the subject are thus recapitulated.]

They are, 1st, the general fact that fibrinous concretions on the valves or the interior of the heart admit of being readily detached during life, and mingled with the circulating blood: 2dly, that if detached and transmitted in large masses, they may suddenly block up a large artery, and

so cut off the supply of blood to an important part; if in smaller masses, they may be arrested in vessels of much less size, and give rise to various morbid appearances in internal organs; while, under other circumstances, the particles mingled with the blood may be extremely minute, possibly the debris of softened fibrin, yet in sufficient quantity and with sufficient power to produce a poisoned state of the circulating fluid, as manifested in the production of typhoid or phlebitic symptoms: 3dly, that the effects produced and the organs affected will be in a great measure determined by the side of the heart from which the fibrinous masses have been detached; for, if the right valves have furnished the source of the fibrin, the lungs will bear the brunt of the secondary mischief, displaying it in coagula in the pulmonary arteries, and various forms of deposit in the pulmonary tissue; but if, as is far more commonly the case, the left valves are affected, the mischief is more widely spread, and may fall on any systemic part, but especially on those organs which, such as the brain, spleen, and kidneys, are largely and directly supplied with blood from the left side of the heart.—*Edinburgh Med. and Surg. Journal, July* 1, 1853, *p.* 119.

29.—ON THE CAUSES OF DILATATION OF THE HEART.

By Dr. W. T. Gairdner.

[Dr. Gairdner read a most valuable paper upon this subject before the Medico-Chirurgical Society of Edinburgh; dwelling also upon the connexion of the heart affection with disease of the lung. He sums up by a synopsis of the whole. He says:]

The following conclusions seem to be fairly deducible from this inquiry, as to its ultimate and most important results:

1. It is *possible* (judging from other cases which I have observed, I should say, *not improbable*), that disease of the aorta and of the kidney may have an influence in determining cardiac hypertrophy. In the case of the kidney, however, this influence is exceptional; in the case of the aorta, it is only exercised in extreme cases of disease, and chiefly in the case of aneurism or dilatation of the arch.

2. There is no good reason to ascribe to disease of the liver, pancreas, spleen, or brain, any considerable influence in determining disease of the heart.

3. Chronic disease of the lung has a most important influence in determining hypertrophy and dilatation of the heart; and the very great majority of cases of cardiac disease, not caused by deformity of the valves, owe their origin to pulmonary affections.

4. Hypertrophy and dilatation of the heart, arising from pulmonary disease, affect in the first instance the right cavities; but when the hypertrophy exceeds a few ounces, the left cavities also become invariably involved in the disease.

5. It is *possible* that part of the influence of pulmonary disease on the heart may be due to obstruction of the circulation in the pulmonic capillaries (as is commonly supposed); nevertheless, it appears, that

under various circumstances producing serious pulmonary obstruction, hypertrophy of the heart does not occur in a considerable proportion of cases.

6. Tubercular disease of the lung produces hypertrophy of the heart only when combined with pulmonary atrophy and induration. Retrograde or obsolete tubercle, with contracting or obliterated cavities, concretions, cicatrices, &c., is very generally associated with secondary disease of the heart; while advancing tubercle has no appreciable influence (or rather, is frequently the cause of cardiac atrophy.)

7. It is not ascertained that pneumonic consolidation, considered *per se*, has any tendency to produce cardiac hypertrophy; but in some cases it appears to do so when accompanied by atrophy or collapse of the lung and emphysema.

8. The great majority of the pulmonary lesions which give rise to hypertrophy and dilatation of the heart are accompanied by partial atrophy of the lung; and usually also by emphysema, which (as I have elsewhere shown) is the almost invariable consequence of such atrophy.

9. Atrophy of the lung tends, in an equal degree, to produce cardiac disease, whether it proceed from bronchitis, pneumonia, or tubercle; whether it be "simple atrophy," or accompanied by induration; whether it be seated at the base, apex, anterior or posterior parts of the lung. Generally speaking, a given amount of pulmonary atrophy may be expected to develop a degree of hypertrophy of the heart proportionate to the dyspnœa which it entails, and the amount of contraction produced by it in the affected tissue.

10. The well-known concurrence of emphysema with hypertrophy of the heart is, in all probability, due to their common origin in atrophic lesions of the lung; the law of production of the one affection being also that of the other. It is reasonable, therefore, to suspect that pulmonary emphysema and cardiac hypertrophy may be found to be, to some extent, alternating as well as collateral affections, in cases where atrophy of the lung gives rise to the conditions necessary for the production of either.

11. It is rendered by this inquiry extremely probable, that dilatation and hypertrophy of the heart are never otherwise than secondary affections, and that they are dependent, in the very great majority of cases, 1st, on valvular deformity and other obstacles to the circulation in the heart or great vessels (dilatation *from within*); 2nd, on the expansion of the thorax under abnormal conditions (dilatation *from without*). The consequence of either of these forms of dilatation, or even of the tendency to either of them, may be hypertrophy of the muscular substance, due to the effort of the organ to act effectively under an increased resistance to its contraction. In the case of dilatation *from within*, an increased power is required to overcome an obstruction in the circulating system itself; in the case of dilatation *from without*, hypertrophy takes place, because the expansion of the thorax in inspiration tends constantly to overload the heart, and this tendency can only be resisted by increased muscular force. The increase of dilatation without corresponding hypertrophy (the *aneurisme passif* of Corvisart) is always the signal of disaster; because it indicates that the balance of the circulating forces is finally destroyed.—*Brit. and For. Med.-Chir. Rev. July*, 1853, *p.* 224.

30.—*Upon Fluids which Stop Hemorrhage.* By SEDILLOT.—*Eau de Pagliari,* consisting of tinct. benzoes, ℥viii.; alum, ℔. i.; water, ℔. x. This preparation, which has a pale straw colour, and is transparent, possesses an extraordinary power of coagulating blood.

Eau de Rabel, consisting of acid. sulphur., 100 parts; alcohol, 300 parts. The acid should be poured upon the alcohol slowly.

Baume de Compingt has not yet been analysed, but appears to contain an empyreumatic oil.

Eau de Hepp is a modification of the Eau de Pagliari.—*Med. Times and Gazette, Sept.* 10, 1853, *p.* 274.

DISEASES OF THE ORGANS OF RESPIRATION.

31.—HINTS ON AUSCULTATION, WITH A VIEW TO THE SIMPLIFICATION OF TERMS AND ARRANGEMENT.

By DR. THEOPHILUS THOMPSON, F.R.S., &c.

[The advantages of auscultation in the examination of diseases of the chest have not always been realized, perhaps, especially, from our being apt to regard the phenomena observed as intricate and complicated. Dr. Thompson observes:]

The soft silky sound, heard on listening to the chest of a healthy individual in the act of breathing, cannot be mistaken. Every practitioner must have had frequent occasion to observe this silky murmur superseded by bubbling sounds, when, in consequence of affections of a catarrhal character, the air in its entrance and its exit passes through the secretions with which the air passages are occupied: the sound being necessarily modified according as this secretion is confined to bronchi of considerable calibre, or diffused through the smaller tubes, or the aerating tissue of the lungs. When the smooth expansion of this tissue is prevented by causes extrinsic to the cells, and the air in expiration does not pass through secretion, the sound produced has not a bubbling character, and may be confined to the period of inspiration. In this way, varieties of crackling and crepitation sounds originate.

When, in consequence of thickening of the investing membranes, or the presence of any partial obstacle, the calibre of the bronchi is altered, vibratory sounds are induced, which may be grave or acute, according to the diameter of the passages affected.

The simple view thus presented sufficiently represents the principal circumstances, which require to be considered in the practical application of auscultation to those diseases of the chest, in which difficulties are most frequently experienced and errors most readily committed.

[In the subsequent tabular arrangement, Dr. Thompson only includes the sounds of practical importance. Several others, as modifications of voice, cardiac sounds, &c., are generally easily distinguished and sufficiently expressive.]

	Sounds.	Synonyms.	Character of sound.	Relation to Inspiration	Relation to Expiration.	Common seat.	Accompanying disease.
1.	Bubbling.		Unequal irregular bubbles altered by cough.				
	a. Bubbling rhonchus.	Mucous rhonchus.		———	———	Middle of both lungs.	Bronchitis.
	b. Small bubbling rhonchus.	Subcrepitant rhonchus.	Few irregular bubbles.	——	———	Base of both lungs.	Capillary bronchitis.
	c. Gurgling.	Cavernous rhonchus.		———	———	Summits.	Excavation.
2.	Clicking.	Humid crepitation or humid crackling rhonchus.	2, 3, or 4 clicks.	— — —	——	Summits.	Softening tubercle.
3.	Crackling.	Dry crepitation or dry crackling rhonchus-	2, 3, or 4 dry sharp sounds.	— — —		Summits.	Unsoftened tubercle.
4.	Crepitation.	Crepitant rhonchus.	Numerous minute, similar rapid puffs, like salt on fire, or rubbing lock of hair between fingers.	——		Base of one lung.	Pneumonia.
5.	Vibration.						
	a. Sonorous rhonchus.				———	General	Bronchial asthma &c.
	b. Sibilant rhonchus.			———	—	General	

It is undesirable to give similarity of name and juxtaposition in arrangement, to sounds characteristic respectively, some of inflamed lungs, others of consumption, and I would venture to propose, as simple, distinct, and suited for clinical purposes, the division into bubbles, clicking, crepitation, crackling, and vibration, as in the preceding table.

The first column exhibits the arrangement which I propose; the second, the corresponding terms in most frequent use; the third, contains brief descriptions of the distinctive characteristics of each sound; the fourth notes the occurrence of the sound, whether chiefly in inspiration or expiration, or in both; the fifth, shows the most common seat of each sound; and the sixth, the principal disease in which each sound is manifested.

1. *Bubbling sounds* are produced by air passing through secretion in the bronchial tubes, as peculiarly occurs in bronchitis; in those of moderate calibre constituting what has been usually designated mucous rhonchus. The smaller bubbling rhonchus produced in the capillary bronchi, commonly known as subcrepitant, should rather be termed sub-mucous, if, from respect to long usage, the somewhat questionable term "mucous" be retained. To these bubbling sounds the term rhonchus is appropriate; but I do not dignify with this title sounds probably produced externally to the cells, such as crackle and true crepitation, which are not proved to have any relation to the passage of air through secretion or vibrating tubes.

2. *Clicking* consists of a series of sounds, few in number, exactly corresponding to the term, audible in some degree during expiration as well as inspiration, and probably never existing except when softened tubercle is present.

3. *Crackling*—a term which itself defines the sound—consists of a few, (not more than three or four,) crackles limited to the period of inspiration, seeming to arise at a distance from the ear, probably produced externally to the cells, and characteristic of the first stage of phthisis, although not invariably present under such circumstances.

4. *Crepitation* consists of more numerous and finer sounds than crackling. It is also confined to the period of inspiration, and is probably due to viscid secretion in the cell-walls, occasioning difficulty in their expansion. It is peculiar to pneumonia.

5. *Vibrations.* Of sonorous, grave or cooing, and sibilant, shrill or whistling rhonchus; sounds resulting mainly from vibration, and indicating flattening or narrowing of tubes, such as is common in chronic bronchitis, it may be sufficient to remark that, when occurring interruptedly, these rhonchi may be occasioned by vibrations of air produced by pellets of mucus, as is sometimes observed in pertussis; but that in proportion to the continuousness of these sounds, there is reason to suspect turgescence or thickening of the membrane, or effusion in the submucous tissue.

A few incidental remarks may here be expedient, in order to explain a little more particularly the modifications which are suggested in this communication.

The term subcrepitant rhonchus has been so long and extensively employed, that the attempt to displace it may seem a bold and doubtful

experiment; but I scarcely know a medical expression which has tended to more danger in practice. The term conveys to the mind the idea of a sound analogous to that usually designated crepitant rhonchus (but which I propose to call crepitation); and has in consequence led to injurious depletion. If asked to specify the greatest abuse of auscultation with which I am conversant, I should instance the leeching and antimonializing of children, in certain pectoral affections, of which the subcrepitant rhonchus is a prominent symptom. Under the cover of a pedantic numerism, the cure of pneumonia without depletion has, on the continent especially, been assumed to be common, because this so-called subcrepitant rhonchus, although really differing in character of sound, as well as in cause, has been mistaken for the rhonchus characteristic of pneumonia. A reference to the table will show the marked difference between these sounds.

As respects diagnosis and treatment I cannot but think that great importance may be advantageously attached to the co-existence of certain sounds with expiration as well as inspiration, with certain qualifications, particularly in reference to vibratory rhonchi; the presence of a morbid sound during expiration affording evidence of the presence of secretion within the cells or tubes. This view is supported by the concurrence of clicking, from softened tubercle, with both respiratory actions, as contrasted with the inspiratory crackle of the first stage of phthisis. The same peculiarity distinguishes the small bubbling (submucous rhonchus) from true crepitation (crepitant rhonchus), which resembles the noise produced by rubbing a lock of hair between the fingers, and conveys to the mind an idea (probably in harmony with the fact) of the abrupt forcing open of cells rendered less yielding by glutinous deposition in their walls. If the cause commonly assigned for "crepitant rhonchus" —namely, air passing through secretion—were correct, the air in repassing should produce a rhonchus during expiration also. The presence of viscid secretion within the pulmonary cells in pneumonia may be acknowledged, without conceding that this secretion is concerned in the production of crepitation; indeed, its tenacity may be a reason why bubbles are not produced, the calibre of the capillary tubes to a certain extent remaining free. When, in the resolution of pneumonia, the secretion becomes less viscid, and occasionally more copious, the rhonchus changes in character, and the sound which has been designated the redux crepitant rhonchus, having more of a bubbling character, and more or less audible during expiration, is produced. The sound sometimes termed continuous subcrepitant rhonchus, existing only during inspiration, and accompanying pulmonary congestion such as attends some forms of fever, I should regard as a subcrepitation, not a rhonchus.

As respects the treatment of inflammatory affections of the lungs; in proportion as sounds are confined to inspiration, they afford reason for depletion; in proportion as the rhonchi become bubbling, they indicate secretion, and suggest a discontinuance of antiphlogistic treatment.

The advantage of introducing terms so diverse as is suggested in the present plan is obvious. If we speak of crackle, the first stage of phthisis is indicated; if of clicking, the stage of softening; if of crepitation, pneumonia is known to be present; if of bubbling or of small bub-

bling rhonchus, secretion more or less copious is known to be present in the different orders of bronchial tubes.—*Association Med. Journal, April* 29, 1853, *p.* 364.

32.—ON TUBERCULOSIS, THE CONSTITUTIONAL ORIGIN OF CONSUMPTION AND SCROFULA.

By Henry Ancell, Esq., late Surgeon to the Western General Dispensary, &c.

[The German pathologists express by the term 'tuberculosis' 'that diathesis or change in the consitution, producing and accompanying the tubercular exudation.' Mr. Ancell limits it to the constitutional disorder, and the local results he styles 'tubercular diseases.' First, on a few points with regard to the blood.]

The general composition of the blood in tuberculosis, according to the various analyses collected by Mr. Ancell, is altered from its normal condition. The corpuscles are diminished, and the albumen increased in quantity. The fibrine is below rather than above the normal amount, and it may be inferred, is also defective in its nature. Elsner, and some other analysts, have found the fatty principles diminished. Dr. Fricke's analyses indicate an increase above the standard of health, in the lime, and a decrease in the phosphates; while l'Heritier states, that in scrofula, the earthly salts are diminished. Hence the blood may be stated generally to be degraded in quality, and endowed with a low degree of vitality.

Whether such be the real changes which occur in the blood, however, is not yet determined with anything like certainty. Thus Andral, in his earlier contributions to hematology, showed that the fibrine was augmented in phthisis pulmonalis; and there can be little doubt that in many cases of that disease, especially where intercurrent pneumonia prevails, it is so. Again, Dr. Glover of Newcastle, from his analyses, maintained that the fats were not diminished in the blood. The fact is, the blood is continually undergoing changes, is constantly receiving matters from the primary and secondary digestions, and as constantly giving off matters by the processes of secretion and excretion. Hence diet, exercise, time of the day, and a multitude of circumstances, so affect the circulating fluid, as to render it very difficult to decide as to its typical composition in any particular disease. On the whole, however, we have no doubt that the blood corpuscles and fatty principles are diminished in quantity, whilst the albumen is comparatively augmented, a condition that seems to us made out by all the chemical, physiological, and pathological researches with which we are as yet acquainted.

Such an altered physical condition of the blood is necessarily accompanied by deviations from the perfect physiological standard of the corporeal functions. This is evinced by a greater or less degree of constitutional debility, a deficiency of vital powers, and weakness of all growth in the ultimate nutrition of the body. Hence the waste which takes place from the beginning, first, in the coloured corpuscles of the blood, and secondly, in the muscles and other tissues. Thus the whole pheno-

mena of the predisposition and the symptoms of the disease show—1st, That from the earliest invasion the sum of the vital force is either below the standard of health, or it is relatively low as respects the structure and organization of the individual; 2d, That this diminution in the sum of the vital force is dependent on the imperfect blastema of the diseased blood causing perversion of the tissues; 3d, That as tuberculosis advances, the sum of the vital force for the whole system continues to diminish; 4th, That the nutritive powers of the blood, as respects the nervous tissue, frequently remain undiminished, this tissue not requiring for its nutrition compound principles identical with it to be introduced into the blood with the food, and having a nutrition peculiar to itself, differing from that of the cellular and muscular structures.

These general propositions will, we believe, be readily agreed to, and the hypothesis advanced to explain the integrity of the function of innervation, whilst that of nutrition is lowered, if not demonstrated to be true, must at least be regarded as ingenious, and consistent with the humoral pathology of the day. Mr. Ancell, however, derives from them some practical inferences, not the least important of which is, that in reference to the general disease. The diagnostic object here is not to determine whether a local tuberculous development exists—a pulmonary or abdominal tuberculosis—but rather to determine whether the patient is truly affected with the blood disease, and thereby threatened with its local manifestation. He considers the successful treatment of the disease of the blood in this stage, based on a knowledge of its nature and causes, is in many instances certain. The successful treatment of the disease, after it has localised itself, is frequently impossible.

Now we consider this to be remarkably sound theory; but the difficulty is to carry it out practically. How are we to distinguish such a preliminary condition, one in which the blood only is affected, before the local disease comes on? Mr. Ancell admits that, in estimating the symptoms of tuberculosis, that is the blood disorder in a practical point of view, their absolute value taken singly, is comparatively little, since one and all occur in other diseases. He considers that it is their relative value—the association of several, or the harmony of many in one case; the manner in which they arise, and their mode of succession, which distinguish them from the symptoms of other diseases, and assists us in the differential diagnosis. Many of these symptoms are found associated in chlorosis, simple anæmic debility from venereal excesses, and other conditions of the economy.

With regard to the structure of tubercle itself, the author cites the opinions of various histologists. who have resolved it into molecules, granules, and imperfectly developed cytoblasts and cells,—the latter being in general very defective, of an irregular shape, rarely round or oval, frequently angular. From this description, those corpuscles are evidently meant which contain no nuclei, and which, in point of fact, are not cells at all.

[As to the *causes* of tuberculosis, though he enters into an elaborate statement, he yet encounters some difficulties.]

Mr. Ancell, in following out his view, with regard to tuberculosis

being the blood disease, is under the necessity of throwing the causation a step further back as it were, and, in doing so, experiences unusual difficulties. Then, as he considers statistics to be the only ground for arriving at satisfactory results, and as these are very loose materials to work with, no very solid or well-formed result has been arrived at. Hence, so far as we can make out, Mr. Ancell attributes vast influence to an hereditary taint; and, as respects the individual, supposes the disease to be the result of combined rather than of particular causes. We have long been persuaded, that the only cause is an imperfect nutrition, and that the principal origin of this is a derangement in the primary digestion. Mr. Ancell, on the other hand, maintains, that the most powerful causes are a vitiated atmosphere, insufficient muscular exercise, and the depressing passions, all of which he thinks meet, as it were, at one common point, and have probably one essential modus operandi, viz., an insufficient renewal of pure atmospheric air, or an abnormal condition of the air habitually contained within the chest. But Mr. Phillips, whose work on Scrofula was also based, to a great extent, on statistical details, as elaborate and careful as those of Mr. Ancell, came to the conclusion that improper food holds the first place in the production of tubercular diseases, whilst a vitiated atmosphere is scarcely appreciable.

[The chapter on 'The Essential Nature and General Pathology of Tuberculosis' is more satisfactory. Mr. Ancell observes:]

"The theories of Buffalini, Canstatt, Mr. Simon, and Dr. Hughes Bennett, undoubtedly approximate more closely to the real question of the essential nature of the disease than either of the others, ancient or modern. There is also no doubt that the whole, however theoretical, and however in some points they may differ from each other, are founded upon the facts of modern science. After all the attention I have been able to bestow upon the subject, I have no hesitation in declaring my opinion, that Dr. Hughes Bennett has advanced the farthest in this investigation; and I believe that the pursuit of the inquiry in the direction indicated by these pathologists, and especially by the latter, will ultimately lead us to a knowledge both of the modus operandi of the causes, and of the essential nature of the disease."

He concludes the discussion of this subject as follows:—

"We thus trace this fatal disease to a primary error or defect in the blood-making process. Vitiated air, or air stagnating or insufficiently renewed within the chest, and probably other anti-hygienic influences—as a vitiated or defective diet—acting singly, coetaneously, or as respects each other ancillary, produces, slowly under ordinary circumstances, but occasionally with great rapidity, some unknown change in a portion of the proteiniform principle of recently formed liquor sanguinis; this change may consist in hyper-oxidation, but whether so or not, it deteriorates its properties, rendering it more or less or altogether, unsuitable as a material for organisation. At the same time, the oily principle of nutrition, circulating with a diminished number of red corpuscles, is, in part, converted into a fatty substance of a lower degree of oxidation. These modified proteiniform and oleaginous principles are exuded in the blastema, and are either employed in the assimilating processes, deranging

the nutrition of many of the organic structures, and giving the tuberculous or scrofulous character to various pathological processes; or, in the more advanced stage of the morbid process, they are deposited in particular tissues and accumulate, generally in the form of tubercle, but sometimes both as tubercle and morbid fat; substances, for the most part, incapable of organisation.

"In the present state of pathological science, confining ourselves to its legitimate object, the study of *phenomena*, apart from any metaphysical views of final causes relating to the *powers* of nature, this appears to us the most accurate definition that can be given of the essential nature of tuberculosis."

[In the chapter on *Treatment*, he considers the baneful effects of vitiated air, and enters upon the subject of a proper diet and other hygienic measures.]

These are—1st, To supply the blood with its constituent materials in a state of purity, in sufficient quantity, and in due proportion; 2d, To adopt all such measures as are calculated to promote the elaboration of the materials of nutrition, the formation of healthy blood, and the elimination of effete matter; 3d, To promote healthy cell growth, and a consequent vigorous nutrition of the organic structures, a symmetrical growth and development of every part and of the whole bodily frame, and a healthful waste and repair. Our limits prevent us entering into the various means indicated by the author for accomplishing these ends; we would, however, call attention to the following judicious observations, because we fear that they are far too little attended to in practice.

"The indisposition to muscular exertion in a majority of tuberculous subjects, and to both mental and muscular exertion in others, has been described. The proceedings adopted to counteract this tendency require to be based upon the most judicious principles. We have to bear in mind, that we are dealing with a state of health in which there is direct debility, or a very inadequate development of vital force. At the same time there is morbid excitability, and accordingly, by injudicious proceedings, a great risk of exhausting the little power that exists. The effect of that exhaustion is, necessarily, to arrest all those processes upon which the system is dependent for the renewal of muscular power. Violent temporary exertions, under these circumstances, can but be most injurious, and it is in this way that occupations of life attended with such exertions prove injurious. They tend to a still smaller production of vital power, and confirm the debility of the disease. Many an individual who might have lived for a long period, or recovered, has had the disease irretrievably precipitated by such exertions. At the same time, moderate, continuous exercise, which expends a portion of the available vital force without exhausting it, induces the natural reactions by which it is renewed. That is to say, it excites the action of the heart and arteries—the nutritive processes in all the tissues—the demand for supply or the appetite—the digestive and respiratory functions—and the reciprocal actions of organising molecules, and the physical agents essential to life. Keeping these principles steadily in view, they may be made to operate as unerring guides in regulating the exercise of tuberculous

subjects. It must not be overlooked, that in tuberculous subjects the heart is most frequently small and weak, and that it is often especially so in relation to the voluntary muscles and muscular power; rendering it excitable and liable to palpitation and exhaustion.

"The vital force should never be exhausted. The rule usually laid down, is 'to encourage as much exercise as can be borne without fatigue.' A better rule would be, to allow of as much exercise as the patient can bear without producing a greater degree of fatigue than will be entirely recovered from after moderate rest. This distinction may appear trivial, but the best test of the injurious or beneficial tendency of muscular exercise, is found in the state of the muscular and other manifestations of vital power after subsequent rest.

"If a tuberculous subject retire at night fatigued, this is but natural, but if he rise also fatigued after a proper amount of sleep, either the exercise of the previous day has been excessive, or it has not been of a proper kind in relation to his state of debility and the slowness with which his system recruits its vital force. If the same amount of expenditure of force be kept up from day to day with the same results, the exercise he takes is increasing his debility; assimilation, and particularly cell-growth and nutrition, becomes less and less perfect, the destructive exceed the assimilative processes in the organic tissues, and atrophy sets in or progresses. Diminished nutrition is the result of this exhaustion; and thus, the labours of the day, which ought to sustain the vital force, absolutely destroy the very source of its supply."

[Speaking of the medicinal treatment of tuberculosis, Mr. Ancell considers cod-liver oil to be the most important therapeutical agent.]—*Monthly Journal of Med. Science, July*, 1853, *p.* 64.

33.—ON ACUTE TUBERCULOSIS.

By Dr. William Jenner.

[This disease very often similates typhoid fever, and like it rarely affects people above the middle period of life. It generally assumes one of three forms—the insidious, the active febrile, and the adynamic.]

The first form occurs almost exclusively in children; the patient often after measles, or scarlet fever, but not unfrequently without known cause, is observed to be languid; unwilling to make any exertion; complains of headache; lies about; seeks quiet, leaving its companions; is heavy, dull, or irritable in temper; the skin is hot and dry; the pulse frequent; the tongue moist, and slightly furred; the appetite lost, or variable; the bowels confined, or irregular; the stools more or less clay-like, putty-like, or party-coloured; the abdomen free from tenderness, and of its normal form; there is trifling cough, and a little sonorous or sibilous râle, or the respiratory murmur is simply rough or harsh, and the expiration rather loud and prolonged, or, it may be, perfectly natural. Some time usually elapses before advice is sought, so indefinite are the symptoms of the illness; and, after it is sought, the physician is occasion-

ally some time in attendance before the gravity of the affection is comprehended; for the febrile symptoms often remit during the day, the skin being little above its natural temperature, and the pulse only a little quicker than natural, when he makes his visit. Thus the disease proceeds for two, three, or four weeks, when the functions of some one organ become disturbed in an extreme degree, and the patient dies with all the symptoms of acute hydrocephalus, tubercular meningitis, bronchitis, pneumonia, or peritonitis.

After death, in such a case, grey granulations, or yellow tubercles, are found in many organs; only in the particular organ from the disorder of which the patient died, in addition to grey granulations, great vascularity, or the products, more or less abundant, of inflammation, serosity, lymph, or pus, are discovered.

In the active febrile form, the symptoms are, from the outset severe, the pulse is quick, and the heat of skin considerable, and the patient, from an early period of the disease, confined to bed.

In the third, or adynamic form, the illness begins somewhat suddenly, after a trifling sense of *malaise* of a few days' duration. The symptoms are, chilliness, hot skin, frequent pulse, moist furred tongue, headache, loss of appetite, confined bowels, vomiting, considerable sense of weakness, great unwillingness to be disturbed, with irritability of temper. After a week or ten days, the mind wanders occasionally, the bowels are generally confined, and the abdomen flat or concave; though the former are sometimes relaxed, and the latter full. The skin continues hot, dry, and harsh; the tongue becomes dry and brown; sordes collect about the teeth; prostration is extreme, and the patient sinks about three or four weeks after the outset of the disease. The two last described forms of acute tuberculosis are seen occasionally in the adult; but, in them, the recent deposit of tubercle, the newly-formed grey granulations, are almost always limited to one or two organs; in the cases which have fallen under my own observation, the pia mater, or the lungs, or both. Under these circumstances, more or less marked disturbances of the functions of the lungs or brain are observed. At the same time, the general symptoms may be either those of the active febrile, or of the adynamic variety. In the *former* case, the disease may be mistaken for idiopathic inflammation, and the general symptoms be regarded as symptomatic; in the *latter* case, the disease may be thought to be typhoid fever.

The diagnosis from typhoid fever, when the granulations occupy the pia mater, is formed *positively* from the frequency of the vomiting, the severity of the headache, and its continuance after the patient is delirious, the knitting of the brows, the frequent sighing, the dislike to light, the occasional and transient general flushings of the face, the slowness of the pulse, and the evidence of paralysis. So long as it is very imperfect, the paralysis may escape observation, unless especially looked for. It is manifested thus:—Sometimes one pupil contracts rather less completely or less actively than the other, when exposed to a strong light. Sometimes there is slight deviation of the tongue. Sometimes the uvula is drawn to one side, and the opposite half of the velum pendulum palati drops. Sometimes one radial artery is felt to be a little

larger than the other, such differences not being natural to the patient. This last evidence of paralysis will occasionally precede any appreciable loss of voluntary muscular power.

There is this seeming peculiarity about these imperfect paralyses in the disease in question, viz., that when observed on the one side on any given day, on the following day the opposite side may be found to be the diseased side. This shifting of the disease is—in many cases, at least—rather apparent than real; thus, the paralysis of the right side we will suppose to be very imperfect, but still sufficient to cause *comparative* sluggishness of the right pupil. On the following day, the left side is the more perfectly, though still imperfectly paralysed; then there is *comparative activity* of the right pupils.

Negatively, the adynamic form of acute tuberculosis, with deposit of grey granulations in the pia mater, is distinguished from typhoid fever by the absence of diarrhœa, of distension of the abdomen, of enlargement of the spleen, and of rose spots.

But all the positive signs may be wanting till near the close of the disease; and, on the other hand, diarrhœa, tympanitic distension of the abdomen, and enlargement of the spleen, may be present, sometimes with, sometimes without, the deposit of tubercles under the mucous membrane of the intestine, and in the spleen. As regards the rose spots, I have never seen them in a case of acute tuberculosis. But Dr. Waller, of Prague, states, that he has observed them in cases of acute phthisis; and Rilliet and Barthez say, that very fugitive, imperfectly formed rose-spots are in rare cases present.

In reference to those cases in which the deposit of grey granulations is limited to the lungs, the positive symptoms for establishing the diagnosis are derived from the signs of oppressed breathing, the rough inspiratory murmur, with intense and prolonged expiratory murmur, and the general diffusion of these signs pretty uniformly over both lungs. Hæmoptysis occurs in some of these cases—rarely, if ever, in typhoid fever.

The affinity of acute tuberculosis with typhoid fever is shown by the general symptoms of the two being often undistinguishable, by the frequency with which particular parts are, in both, the seat of disseminated protein deposits, and by the tendency manifested in both to ulceration, not only of the mucous membranes generally, but of a part of the intestinal mucous membrane which is rarely the seat of ulceration in other diseases, viz., that covering Peyer's patches.

With reference to the close resemblance of the symptoms in some cases of local inflammation, with adynamic symptoms, and typhus fever, of acute tuberculosis and typhoid fever, of measles and scarlet fever, of typhus and typhoid fevers, I would quote the following sentence by the author of the "Philosophy of Medical Science:"—"It is very important for us to bear in mind, that great difficulties of diagnosis in individual cases are in no way incompatible with the existence of essentially and widely different diseases. Morbid affections, very unlike each other, and in most cases easily distinguishable, may, under certain circumstances, have many things in common; and their symptoms may be so mixed up with each other, as to render, in the very imperfect state of our knowledge, a positive diagnosis very difficult or impossible, and this without

throwing any doubt upon the general question of the radical dissimilarity between the diseases themselves."—(Bartlett, p. 321.)—*Med. Times and Gazette, May 7, 1853, p. 464.*

34.—ILLUSTRATIONS OF TUBERCLE.

By Dr. Edward Henry Sieveking, Assistant Physician to St. Mary's Hospital, &c.

[The term tubercle, though synonymous with 'nodule,' has generally come to imply a certain form of deposit occurring in a peculiarly fatal diathesis. The importance of this need not be dwelt upon here.]

That constitutional tendency which leads to the deposit of tubercle, and is to be found wherever the necessary stimuli of life, and, above all, pure atmospheric air, are deficient, predisposes to other diseases as well; it assists the approach of the enemy, and actually places the fortress in his power before a formal assault is made. Though we no longer believe in the elements of Thales, we may, without a great stretch of the laws of the natural sciences, admit that air is the chief element of health or disease, according as it is supplied to the lungs in its unadulterated condition of four-fifths nitrogen and one-fifth oxygen, or as it carries diffused through it carbonic acid gas, carbonetted hydrogen, sulphuretted hydrogen, the effluvia of cesspools and drains, the poison of influenza or cholera, the emanations of the variolous or typhous patient.

Allow me, briefly to advert to the origin of tubercle. We possess sufficient evidence to show that it is derived from the blood; that it transudes from the capillary vessels of the part in which we find it; and that, after having been deposited, it is liable to undergo certain further changes. On a close examination of incipient tubercular deposit, we may always note that there is congestion in the tissues immediately surrounding it. In the pia mater of the Sylvian fissure, we see an increased redness, in which a few vessels are more prominent than usual; in the pulmonary parenchyma we may, especially by the use of the microscope, discover the engorgement of the interlobular capillaries investing the air vesicle into which the tubercle is being secreted; in the mucous membrane of the intestines, we see the exquisite arborescent arrangement of the congested vessels, tending from the mesenteric attachment to the point where we observe the deposit shining through the mucous surface from the submucous tissue, in which it has collected. The first elimination of the morbid product acts like a magnetic point of attraction, and generally serves as a centre round which the deposit progressively enlarges by eccentric deposition. The amount of vascular action accompanying the elimination, varies in different individuals; in some, there is scarcely a perceptible increase in the sanguineous current; in others, we cannot deny the presence of acute inflammation, shown both by the congested state of the blood-vessels, and by the presence of plastic exudation and exudation corpuscles. In ordinary inflammatory conditions, we may actually observe the part taken by the capillary vessels in

the process of transudation. We see the inflammatory product immediately after its passage through the vascular membrane, coating the vessels; and, if my limited observations justify the statement, we may see the same matter within the vessels, adhering to the coats, previous to its discharge. Whether it be so or not, whether we may be enabled to observe the transition of the contents of the vessels into the surrounding parts or not, it is evident that we ought not to be satisfied with ascertaining the fact of the exudation as the primary change: we are driven to take one step more, before we gain the fountain-head of the malady; we therefore look to the constitution of the blood itself in tubercular disease, in order to ascertain whether any deficiency in the normal components, any variation in their relative amount, any new products, are to be met with, which may explain the source of the extravascular deposit. All observers, who have brought either the microscope or chemical analysis to bear on this subject, are agreed that there is an alteration in the blood, indicating a want of vigour and tone. There is a general increase in the fluid parts, the water and albuminous constituents; while the solids are diminished, the fibrine and the red corpuscles are reduced in quantity, and both exhibit what has been termed diminished vitality; the fibrine possesses less plasticity; the blood corpuscles are feebly formed, their outline less defined, their colour faint, and the colouring matter easily yielded up to the surrounding fluid. The actual relation of the white cell to the red corpuscle in various diseases has not as yet been satisfactorily demonstrated; but we are inclined to view an excessive development of the former as indicative of debility, and an aplastic, if not cacoplastic, condition of the blood: we certainly have noted an increase in their number in persons affected with tubercle. Many peculiarities in the blood of tuberculous individuals are also met with in the blood of individuals labouring under other diseases. We are not, therefore, justified in laying down any absolute indications which are conclusive evidence of the tubercular infection; and if we are unable to define the specific constitution of the blood that accompanies tuberculosis, it follows, *a fortiori*, that we are not possessed of the means of predicating a mere tendency to tubercular deposit from the constitution of the blood. This, however, is the point to which we must hope to arrive, if, as we believe, one of the primary elements of the malady is traceable to the blood, and the seeds of the disease are sown, and therefore must be destroyed here, unless they be anticipated before their introduction into the body. On this point, Mr. Ancell, in his laborious work on 'Tuberculosis,' judiciously remarks:—"The predisposition differs from the general disease only in degree, and the condition of the blood in the predisposition is the same, differing only in degreee;" and so undoubtedly it is, but we yet want that positive and conclusive sign by which the predisposition may be recognized by analysis of the blood. It is manifest that, with regard to tuberculosis as well as other diseases, such an indication would be of extreme value; for, as the diagnosis of morbid processes in the thorax has improved, our treatment of these diseases has commensurately acquired greater simplicity and greater certainty. In the same way, it is tolerably certain that, if we discovered the means of recognizing the seeds of a malady before

they had taken firm hold upon the system, we should be enabled to eradicate them, or to counteract their influence more effectively than we now can.

[Though the stomach is no doubt a great agent in the production of of the tubercular disease, yet Dr. Sieveking inclines to the common opinion, that the organs of oxygenation have a greater share in its development than those of sanguification. He says:]

Baudelocque, who has written some of the wisest remarks on the relation between the respiratory function and tuberculosis that I have met with, affords some very striking illustrations of this position. He states as the result of his examinations and experience, that a truly scrofulous disease is invariably caused by vitiated air, and that it is not always necessary that there should have been a prolonged stay in such an atmosphere. Often a few hours each day may suffice, and it is thus that patients may live in the most healthy country, pass the greater part of the day in the open air and yet become scrofulous, because they sleep in a confined place where the atmosphere has not been renewed. M. Baudelocque illustrates these observations by numerous well chosen instances; he refers, among others to the shepherds of his country, who may become scrofulous although they lead an open air life; but although, as he says, the disease with them is attributed to exposure to storms, to atmospheric vicissitudes, and to humidity, attention has not been paid to the circumstance that they pass the night in a confined hut, which they transport from place to place, and which protects them from the rain; this hut has only a small door which is closed when they enter, and also remains closed during the day; six or eight hours passed daily in vitiated air, which is never renewed, is the true cause of their malady. I have spoken of the bad habit of sleeping with the head under the clothes, and the insalubrity of school rooms in which a number of children are assembled together. The repetition of these circumstances is often a sufficient cause of scrofula, though they may last but for a few hours a day. Human beings and animals are equally affected by vitiated air: close rooms, as Dr. Arnott has pithily remarked, act like extinguishers to the vital flame; and the extinction literally takes place at the point at which the fuel accumulates for want of being burnt off. If space and time allowed, I would multiply the evidence that has been adduced in support of the particular view which I have dilated upon; but this is beyond the limits of this paper, and moreover, there is now scarcely a necessity for enforcing what, I believe, is the prevailing opinion among medical men. To sum up, while we would not deny that defective supply of food and raiment influences the production of tubercular disease, no cause so certainly predisposes to and generates it as defective aeration. The exact part taken by the *light* in this matter cannot be appreciated. Its direct influence upon the health of everything living is proved irrefragably; but whether its absence can alone induce morbid states of a definite character, remains yet to be proved.

As the tubercular deposit is derived from the blood, it is not surprising that all the organs of the body are more or less liable to become the seat of the morbid product. Some tissues present a greater pro-

clivity to the elimination than others: and some, as the fibrous and tegumentary tissues, appear to enjoy almost an immunity from tubercle. At the two ends of the scale, we may place the mucous membranes and the fibrous tissues: the former are the true soil for this tree of death; the latter are rarely, if ever, affected. There can be little doubt that this depends in a measure upon certain physical laws, influencing the current in the vascular system, and determining the greater or less facility of transudation, in the first instance. I should venture to suggest, that we may lay it down as a law regulating the deposit of tubercle, that it is effected at that point of an organ or of a tissue where the smallest amount of pressure is exerted upon the capillary system. This does not exclude the operation of other laws, which determine the attraction to any one organ. It does not offer any reason why in one case we find tubercle in the spleen, in another in the mesenteric or bronchial glands, in a third exclusively in the pulmonary tissues; but it seems to embrace the various circumstances modifying the exact site of the deposit in these different parts of the system. The *vis a tergo* varies but little in the different parts of the capillary system; but the relation to surrounding tissues differs very much. Thus, while the force with which the blood is driven into the interlobular plexuses of the lungs, is identical, the pressure which the respective capillary systems meet with in a case of congestion, which implies a tendency to exudation, is necessarily greater in the bone than in the soft parenchymatous structure. No organ is more frequently the seat of tubercular deposit than the lungs, and in none do we find the capillary ramifications of the vessels with so little covering. They almost lie naked on the surface. Beyond the basement membrane forming the air vesicles, and possibly a delicate epithelial layer, there is nothing between the capillary network and the atmosphere. We need not therefore wonder that the ultimate vesicle in which the bronchule terminates is, above all other points, that of tubercular election. The receptacle is ready; the product being in the blood, a slight increase of pressure will overbalance the natural and healthy equilibrium between the external and the internal fluids, and the discharge takes place. If our view is correct, nothing but a previous change in the ultimate vesicles or bronchules could give rise to a deposit of tubercular matter in the intervesicular tissue, in the parenchyma of the lung itself, as contradistinguished from the respiratory cavities. We can suppose that obliteration of a portion of the breathing apparatus might leave the intervesicular texture less resistent than the air vesicles; and in that case we should expect to find an interstitial deposit. Whether this does actually occur I am not prepared to say. I have not seen any appearances that would justify the assumption of a primary interstitial deposit, but I have seen a distinct deposit of tubercular matter within the air-vesicles, and I have traced its primary deposit, in the semi-liquid form, in the solitary vesicle, to the deposit in numerous adjoining vessels, causing destruction of their breathing power and obliteration of the bronchule terminating in them.

[Dr. Sieveking observes that the ultimate bronchule is perfectly free and patulous, and that the tubercular matter fills the vesicle as a bullet fills its mould. He then proceeds:]

The law to which we have adverted as, in our opinion, regulating the deposit of tubercle, viz., that the tendency to the deposit in any organ is inversely as the pressure the vessels sustain, or that it is in the ratio of the laxity of the tissues, is supported by the views which are commonly held with regard to the chemical constitution of tubercle, by the form and mode of deposit in the various organs of the body, and it also assists us in explaining why certain parts of different organs possess so marked a liability to become the seat of tubercular exudation. This feature constitutes an essential difference between tubercle as a mere effusion of a certain constituent of the blood, and those other new formations in which we cannot but see a tendency to independent development or organisation. The most familiar instance of pathological processes with which I would compare it, are the serous effusions that take place into the peritoneal cavity, from obstruction to the vena cava or portal system, inducing congestion and consequent liquid discharge at the most yielding points. If we adopt the view suggested, it appears to me to offer an explanation of the circumstance that the apices of both lungs are the chief seats of tubercle, while it tends to show the importance of encouraging the use of all the physical means at our command to promote a free and active circulation of the entire vascular current, and to obviate and anticipate anything approaching to local congestion in the organs and parts of organs which we know to be most liable, at different periods of life, and under different circumstances, to become affected with the disease in question. The manner in which I would apply the law to the explanation of the predominant proclivity of the pulmonary apices, is simply this: the upper portions of both lungs are surrounded by more unyielding parietes than the inferior; they have less room for expansion; consequently, if there is any increase in the vascular current supplying these parts, the difference between the pressure of the parietes and of the atmosphere within the vesicles will increase unduly, and effusion will take place into the latter. In acute tuberculosis, we do not observe this peculiar election, because the process is of a more active character; the strain upon the capillaries of the entire organ is greater than they can bear, and we consequently find the deposit takes place with much uniformity throughout the lung. In the chronic forms in which tubercular deposit generally occurs, the balance of the forces in the different parts of the vascular system is in a measure preserved, and only the very weak points are assailed. We do not at all deny that other forces come into play, and that there are elective affinities between different tissues and morbid products with which we are not even acquainted as yet; but it appears that the circumstance alluded to is one of considerable importance in its bearings upon tubercle, both in the lungs and in the brain and abdominal tissues. To take a single instance from the latter: in scrofulous deposit in the kidneys, where does the tubercular matter invariably present itself? In the loose textures of the cortical substance. The dense tubular tissue, with its stronger basement membrane and firmer epithelial coat, wards off the encroachment; but the feebler texture of the convoluted tubes is unable to repel the enemy.

[Lastly, the author examines the ultimate constituents of the tuber-

cular deposit, with a view to its general recognition and the cure of the condition on which it depends.]

The simplest definition of tubercle appears to me to be, according to the present state of knowledge, the following: *Tubercle is an exudation from the blood of a protein compound, incapable of organisation, but undergoing certain physical changes independent of vital influences.* Tubercle is, in fact, effete matter which the powers of the system are unable to use as building material to repair the normal waste; and it is deposited in this or that organ of the body according as it is invited by the greater or less debility of the part. Tubercle is not a plastic material; it is not a growth; it is not the manifestation of a depraved germinating power, superadded, as it were, upon the normal energies of the system, or taking their place, such as we find to be the character of malignant disease; nor, on the other hand, is it identical with the effusions of blood-constituents which result from an exaltation of the normal energies, and continue in possession of their vitality, by which they are susceptible of organisation. This we do not see in tubercular deposit, which must be viewed as bearing to the diathesis giving rise to it, very nearly the same relation as, to use the strongest comparison that suggests itself to us, calculus in the bladder bears to the calculous diathesis to which it is due. There is, unfortunately, no such emunctory for the effete protein compounds, as there is for the excess of saline constituents of the blood; or tubercle might accumulate as the latter do, at a given point, and the product be removed by operative proceedings, or by chemical solution. The lungs and the skin have this duty to perform; but I need not stop to point out to you why we have not yet succeeded in destroying the tubercular product in the former, and removing it from them, by direct applications. I do not myself despair of a remedy being discovered which, in a gaseous form, may be conveyed to the deposit in the lungs, and, by dissolving it, enable the patient to expectorate it; but this would only affect a single organ. The cachexia leading to the local product will ever remain the real malady to deal with, so that we may anticipate its local effects.

The changes which take place in the deposit itself, and which have been the source of much discussion, and of some very wild speculations, are, as I have already observed, closely allied to what we see taking place out of the human body in inorganic substances. They seem to follow the laws regulating crystallization and chemical decomposition rather than those of vital action.

The earliest form in which tubercle presents itself to the eye is that of a faintly granular blastema, in which we are only just able to trace a tendency to aggregation into circular forms.

The next form which we find tubercle presenting is that of more definite corpuscles; they offer an oval form, with a more or less sharp outline, and a granular surface. These corpuscles are surrounded by the granular blastema before mentioned, which now becomes more definitely marked, and by and bye appears to eliminate oil-globules in a greater or less quantity. The tubercular corpuscle does not present a nucleus as its normal constituent; it is, in fact, regarded by some, among whom I may be allowed to mention Dr. H. Jones, as itself a nucleus. We occa-

sionally find cells with nuclei in tubercular matter, but I am inclined to think that they are generally, if not always, derived from the normal tissues of the organs in which the deposit has taken place.

A term has of late been brought into vogue by the authority of great names, to which, before concluding this brief sketch, it is necessary that I should allude, as the subject to which it refers is closely associated with tubercular disease. I refer to *fibrinous deposits*. Many of the cases which are thus denominated present no differences perceptible, either to the naked eye or under the microscope, by which we can distinguish the product from tubercle; and in such it is scarcely in accordance with sound induction to assume a different disease, until we are able to demonstrate a distinct primary lesion in the blood.—*Association Med. Journal, May* 27, 1853, *p.* 451.

35.—ON THE TYMPANITIC SOUND, PRODUCED BY PERCUSSION OF THE LUNG, WHEN PARTIALLY CONDENSED.

By D . W. O. Markham, Assistant Physician and Curator to St. Mary's Hospital.

[Dr. Markham observes, that two cases have convinced him of the fact that the percussion sound of a partially condensed lung is clearer than that of an healthy lung.]

In the one case, the left lung was found reduced by the pressure of pleuritic effusion to about one-fourth or fifth of its natural size; its lower lobe being *completely*, and its upper lobe *partially*, consolidated.

In the other case, the *partial* consolidation was general throughout both lungs; it was caused by the effusion within them of the products of inflammation, excited by the rapid and extensive deposition of miliary tubercles. Now, when in these two cases the lungs, thus differently circumstanced as regards the nature of the disease affecting them, were removed from the bodies after death, placed side by side, and percussed, it was observed: That the *partially* condensed upper lobe of the pleuritic case, and every part of the lungs invaded by inflammation in the other—especially the posterior parts, where the consolidation was most advanced, and the lungs contained the least amount of air,—yielded a remarkably clear percussion sound, which, in both cases, as far as the ear could judge, was exactly alike in its characters; the sound was that to which, for want of a better, I have affixed the term "hollow": it is clear, high-pitched, empty, of a tympanitic character, and somewhat metallic; the vibrations of sound producing it appear superficially distributed, ceasing quickly, and not passing deeply. Perhaps it would be most convenient to designate the sound as "tympanitic," for I believe that this word is rarely in practice used to indicate merely a drum-like sound, as its origin would require; the term "hollow" is objectionable, and for an evident reason.

The left side of the thorax of the patient attacked by the pleuritic effusion yielded, two days before her death, a completely dull percussion sound at every part; and the heart was found beating to the right of

the sternum. To relieve the great difficulty of breathing induced by this copious and sudden effusion of serum, a very fine trocar was introduced into the pleural cavity, and about twenty ounces of fluid withdrawn therefrom, by the aid of an exhausting syringe. Great care was taken that no air entered into the pleura, and that none did I am satisfied, having assisted at the operation. Temporary relief was thus afforded the patient; and now, immediately after the operation, on percussion beneath the clavicle, we found, instead of the completely dull percussion sound observed previously, a remarkably loud, clear, tympanitic sound—so marked, indeed, as to lead an observer to suppose that air had found its way into the chest. That there was no necessity for our thus calling in the presence of air to give reason for the sound, we had the demonstrative proof after the patient's death, when the body was examined. No air escaped from the pleura, but on puncturing the left thorax a large amount of fluid gushed forth, and when a certain amount had escaped, the partially condensed lung floated forwards against the upper and anterior walls, and its percussion now both within, and when removed from the thorax, yielded a character of percussion sound, *exactly similar to that which it had offered during life*, after a portion of the pleuritic fluid had been withdrawn.

I did not observe, during life, the nature of the percussion sound of the thorax in the case of partial consolidation, produced by tubercular inflammation, but it nevertheless well illustrates the fact I am alluding to.

The conclusions which I am justified in drawing from these cases are :—

1st, That Skoda's assertion, that a *partially* condensed lung yields a clearer and more tympanitic percussion sound than a healthily inflated lung, is correct.

2ndly, That Dr. Williams' mode of accounting for this "tracheal" sound, as he calls it, viz., by supposing that the upper part of the lung is compressed against the anterior walls of the thorax by the fluid behind, and thus being consolidated, transmits, when percussed, the hollow sounds of the large tubes, is not correct, at least in all cases, for here was an instance in which *every part* of the *partially* consolidated upper lobe yielded equally well the tympanitic percussion sound, and so also when divided to show the absence of all hollowness or large tubes.

3rdly, That the sound, so far from of necessity indicating the presence of air in the pleura, is a sign that the lung contains less than its normal amount of air.

One important practical deduction, if I am not mistaken, naturally flows from these facts, viz., that in certain cases of pneumonia, *if not in all*, when the consolidation of the lung has reached a particular stage, *but not yet that of hepatization*, the percussion sound over the affected portion, so far from being duller, *is actually clearer than natural.* The error of diagnosis into which a misinterpretation of this fact may lead the physician, is manifest enough; it may induce him at a critical period of the disease, viz., when the lung is on the eve of complete consolidation, to prognosticate a commencing return to its healthy condition.—*Monthly Journal of Med. Science, Aug.* 1853, *p.* 173.

36.—*Tannate of Quinine in the Night-Sweats of Phthisis.*—In the 'Union Médicale' for April 12th, M. Delioux describes several cases in which he has administered tannate of quinine with the effect of arresting night-sweats in cases of pulmonary consumption. He says that, though it is sometimes inferior to pure tannin, it is superior to disulphate of quinine; and that it combines the action of a tonic and antiperiodic. He gives it in powder, the quantity taken daily being from half a *gramme* to a *gramme* (seven and a half to fifteen grains), in three or four doses, taken at intervals during the afternoon or evening, so that the last may be administered three or four hours before sleep.—*Association Med. Journal, Sept.* 2, 1853, *p.* 778.

37.—OBSERVATIONS ON EMPHYSEMA PULMONUM.

By Dr. George Corfe.

[Dr. Corfe is of opinion that any one going constantly round the wards of large hospitals would come to the conclusion that emphysema pulmonum and bronchitis are essentially blood diseases. The first disease, especially, occurs in people who for some time have lived upon poor vegetable food, and then, perhaps, on obtaining employment have worked hard for a few days, when they have been seized with dyspnœa, cough, and expectoration. Dr. Corfe has noticed this particularly to be the case in washerwomen and navigators. In examining the physical condition of the air and the pulmonary blood, he observes:]

The specific gravity of a cubic inch of air is ·185, that of water is 1000, and that of blood 1050. Forty cubic inches of air weigh about 12·980 grains; the same amount of blood weighs about 10,653·3 grains. Thus, the latter fluid is somewhat 865 times heavier than air; or, as ·185 is to 1050. The amount of air, as it passes into the lungs, is opposed by a column of blood coming from the heart, in the proportion of one inspiration to four pulsations of the right ventricle. Each inspiration carries into the pulmonary cells 40 cubic inches of air, and the average number of inspirations in an adult is 20 per minute. Each ventricular contraction throws two ounces of venous blood into the pulmonary cells; and, as there are four contractions to one inspiration, about eight ounces of blood is therefore dispersed through the pulmonary capillaries, from minute to minute.

The ordinary amount of atmospheric pressure on the human body, at the level of the sea, is about fifteen pounds on every square inch of surface; but the air which pervades the body balances and counteracts this pressure from without; so that the elasticity of the air within and the external weight of this fluid over the whole body are exactly and equally poised; and thus it is that we are not conscious of any pressure. But, if there should occur any diminution of weight in the columns of air which we breathe, this equipoise is altered—these opposing forces are unequal—the even balance is destroyed, so that one is relatively stronger, and the other is relatively weaker, than each was before any alteration took place. The effect of such diminution of weight in the air is ex-

perienced by those individuals who have ascended into a more subtle and rarefied atmosphere, as aëronauts and visitors to Mont Blanc, &c.; in such cases, the resisting power of the blood in the lungs has not been counterpoised by an equally heavy column of inspired air; so that the pulmonary capillaries have given way, the cells have broken, and blood has burst forth, and has been freely coughed up. But, in order to follow up our present inquiry, let us reverse the change, and consider the effects which may ensue upon an alteration in the other fluid, namely, the blood. This vital fluid in health contains from 778 to 853 of water, and from 57 to 78 of albumen, and from 1·360 to 2·236 of dry fibrine in every 1000 parts. In order, then, for an individual to continue in a robust and healthy state, it is needful that the blood should be duly supplied with a given quantity of albumen and of fibrine. This supply is exclusively derived from azotized substances, such as animal food, &c. If this supply is deficient, the blood loses in weight and in vigour, its watery elements are increased, and its solid contents are decreased, and thus the absolute specific gravity of this fluid approaches nearer to that of water than it does to that of healthy blood. Under these changes, it cannot act as a resisting medium to a given quantity of inspired air; for if its specific gravity is reduced, for example, from 1050 to 1025, and a column of air charged with an unusual amount of moisture is respired, the resisting force is unequal to support the weight, the air-cells burst, and the foundation of inter-lobular pulmonary emphysema is immediately established. The sense of dyspnœa now begins, and, from a small spot of such breaking up of pulmonary vesicles, an entire lobe may shortly become emphysematous. The fact, that this disease ordinarily sets n at the margins of the lower lobes, and not in the centre of the upper lobes, will further explain the mode in which emphysema occurs, namely, from the feeble resistance which a column of blood, spread over the area of the pulmonary cells offers to the increased weight of the columns of air. Dr. Goodfellow informs me that emphysema pulmonum is very common among the coalwhippers in the east part of London. These men drink largely of porter, and eat animal food sparingly. When they raise the coal from the hold of the ship, they fill their lungs by a forced deep inspiration, grasp the rope, and leap from the steps to the deck, and then as suddenly expel the air from their over-inflated lungs. This action mechanically breaks down the delicate pulmonary areolæ, just as we should burst a thin paper-bag, by forcing a large column of air into it. This fact is mentioned in order to show that, if undue force is brought to bear upon the areas of the pulmonary cells, and that force is not met by an equal antagonistic resistance from within, the cells must necessarily break down.

When a confirmed state of emphysema pulmonum is established, dilatation of the right chambers of the heart eventually comes on. When this change is superadded to the pulmonary disease, the attacks of dyspnœa will usually be most severe at the turn of the night, *i.e.*, from twelve to two. The circulation is then at the minimum of its twenty-four hours cycle; and the delay which a lung, bloated with pent-up air, causes to the flow of blood through it, also produces a tardy supply of blood to the left side of the heart, so that the ventricle is not roused to

action by a due amount of arterial fluid. The patient now will be suddenly awoke by a sense of impending suffocation; he sits up in bed, gasping for breath, and is often many hours struggling in this distressing paroxysm, until, at length, the pulmonary circulation has become poised, the left ventricle duly supplied with blood, the cardiac muscular fibres soothed, and the dyspnœa gradually assuaged, and he once more falls into a doze.

These few observations have been founded on the pathological facts connected with the onset of emphysema pulmonum; and the practical deductions which may be made from them are the following:—

1st. That, in the majority of such cases which occur in our large towns, in overcrowded localities, or, indeed, in any vitiated atmosphere, and where the artisan or labourer is insufficiently nourished with a generous animal diet, it is a blood disease in its origin, and that this form of toxæmia is further asthenic in its character; the amount of fibrin, albumen, and red globules of the blood, is below the average standard of robust health.

2nd. That the disease is not remedied by antiphlogistic treatment, nor by blood-letting, expectorants, &c., &c., but that it is relieved by small doses of iron, quinine, and tonics, together with a generous diet of animal food and porter. Among the most useful forms of steel, that of the sulphate seems to rank the first, one grain of this salt and one of quinine in the compound infusion of roses, with syrup of ginger, is as valuable as any I know of in this distressing malady. Dry cupping between the shoulders, the inhalation of creosote in the proportion of twenty drops to a pint of boiling water each night, the occasional use of a stramonium cigarette, or twelve drops of chloric ether, have severally been known to ward off an attack of nocturnal dyspnœa. The fumes from a slip of lighted nitre touch-paper have long been a favourite remedy in the wards of this hospital for cutting short an attack A gentleman of my acquaintance is always greatly relieved by a large dose of the hydrochlorate of ammonia, which he takes as soon as he feels the paroxysm approaching.—*Med. Times and Gazette, July* 23, 1853, *p.* 86.

38.—CREOSOTE INHALATION IN PHTHISIS AND BRONCHITIS.

By Dr. Thomas Inman, Liverpool.

[In a letter to the editor of the 'Medical Times and Gazette,' Dr. Inman speaks of the benefit derived in these diseases from the inhalation of creosote, combined with steam. His first experiment with it was in a case of phthisis, when it succeeded in relieving the irritating cough, after a host of opiates and other remedies had been tried in vain. He says]

Encouraged by the success attending this, I determined to try it in other cases, some of chronic bronchitis, the majority of phthisis. In all I have found it most useful in allaying cough, and checking secretion and expectoration. By allaying the cough, and thus increasing the comfort

of the patient, it seems in some degree to increase the strength; at any rate, it saves its diminution. It does not of itself appear to possess any curative power. As a palliative, it is useful in all cases; and I have heard it spoken of most gratefully by a patient who only lived to use it for three or four days.

The mode of using it is very simple. I direct from four to ten drops of creosote to be placed in the bottom of an old teapot, and a small quantity of boiling water to be poured over it. The spout is to be protected by a piece of flannel, and the steam inhaled through that until it begins to feel cool. Care must be taken, of course, not to put too much water in. This answers well enough in poor practice. In hospital and private practice, more elegant apparatus may be used. An inhaler made by Weiss answers remarkably well. It consists of a closed tin can, holding about three pints: at the top are two large tubes, which communicate with the interior; one is furnished with an ivory mouth-piece, to prevent the lips being burned by the hot metal; the other is turned upwards, and, through this, the creosote and water are readily introduced. The size of the tubes makes the inhalation of the steam peculiarly easy. When this is employed, I find that the temperature of the water should not exceed 150°. The immediate effects are, a feeling of warmth about the throat, and a sensation "as if you had lungs under your ribs," followed by reduced irritability of the mucous membrane, and, subsequently, by evidence of the creosote having entered the blood.

It would take up too much space were I to detail all the cases in which I have employed it in hospital and private practice; one will suffice, and will serve to indicate the routine treatment I have adopted in phthisis.

A. B., seaman, aged 30, was admitted into the Northern Hospital with severe cough, dyspnœa, and profuse expectoration. He had been ill for three months, during which he had emaciated considerably. The pulse was 130, and there were copious night sweats. On examining the chest, I found solidification of the apex of the left lung, and coarse mucous râles all over the same side, both anteriorly and posteriorly. At the apex of the right lung there was tubular breathing in one spot, and prolonged expiration in another. The expectoration was of thick, semi-transparent mucus, free from air-bubbles, and mixed here and there with grey tubercular patches. He was ordered to have creosote inhalation three or four times, and to take internally half an ounce of cod-liver oil, with twenty-five minims of tincture of iron, three times daily. The severity of the symptoms abated in the course of a week, and, in six weeks, the man was convalescent. The right lung now seems perfectly healthy; all traces of solidification have disappeared from the apex of the left; the respiration there, and over the whole of that lung, has become natural. The pulse has come steadily down to 72. The man has gained flesh, and the capacity of the chest, as evidenced by the power to take in a deep inspiration, has signally increased.

I may mention, that the use of iron has been adopted in consequence of the effect it had on a little girl, who had been previously employing creosote inhalation and cod-liver oil for some weeks without any indica-

tion of improvement. In her case the whole of the left, and the upper part of the right lung were implicated; but I could not detect any cavities. The case seemed hopeless, when she began with the tincture of the sesquichloride, in addition to her other medicine. In two days an improvement was seen; in four it was confirmed; and, in less than six weeks after, she was running about the wards rosy and well, and has continued so up to the present time—about two months more.—*Med. Times and Gazette, May* 14, 1853, *p.* 507.

39.—ON THE USE OF CHLOROFORM IN HOOPING-COUGH.

By Dr. Fleetwood Churchill.

[Dr. Churchill remarks that previous to the introduction of chloroform into medical use, he had tried sulphuric ether as a remedy for hooping-cough. Both this and chloroform has an undoubtedly good effect in allaying the violence of the paroxysm, but the objections are, that in children the attack is so sudden that it is difficult to have the chloroform in readiness, and that they have such a horror of anything being applied over the mouth, that the resistance met with prevents its taking effect. The following cases, however, illustrate its value in patients above 14 years of age.]

Case 1. Miss D., æt. 16, had had hooping-cough a month, when I prescribed chloroform. There was no complication, but the whooping was frequent, especially during the night. She was directed to have the chloroform in readiness, and to use it with each paroxysm, and she assures me that in two days the whoop ceased. The cough lasted a few days longer, but it was slight and not in kinks.

Case 2. Miss A., æt. 20, had been ill with hooping-cough for about three weeks, when I prescribed chloroform. The cough was not very frequent, and there was no complication. Two days sufficed with her also to relieve her of the whoop; and the slight cough which remained subsided after a week or ten days.

In these two cases the effect seemed quite magical; both had the disease well marked, and the families of both were prepared for a disease of two or three months' duration, as was the case with these other children.

Case 3. Miss B., æt. 18, took the complaint from her brother, whom I was attending, and I therefore had an opportunity of giving chloroform from the commencement. She did not whoop any time she coughed; but she was directed to use the chloroform whenever she felt the tickling in the larynx, without waiting for a cough. By doing so, she found that she could postpone the cough idefinitely, and if it came on suddenly, the use of the chloroform instantly suspended it. About three weeks elapsed before the tendency to cough and the use of chloroform ceased; but during that time she lost neither appetite nor flesh. She slept well, was in good spirits, and able to follow her usual occupation. She went to the country quite well.

Case 4. Master B., æt. 16, the brother of the last case, when I first

saw him, had the disease most severely. The kinks were violent and prolonged, the efforts to inspire, and the whoop excessive; it really seemed as if he would be choked or that something would give way. He had lost appetite, sleep, and spirits, although the disease had not lasted three weeks when I saw him. I tried chloroform with him, and it at once reduced the number of paroxysms one half, but without mitigating them when they did occur. He took the chloroform very freely, and as he was not readily influenced by it, the quantity seemed to give him a headache, and he begged to be allowed to suspend its use. I the more willingly agreed to this, as he had a severe attack of diarrhœa. I therefore substituted two drops of prussic acid (Dub. Pharm.) with two or three of black drop three times a day. The improvement, begun under chloroform, continued under this treatment, and at the end of five weeks from the beginning of the disease the cough had ceased, and he had regained rest, spirits, and flesh.

Although this last case cannot be regarded as cured by chloroform, the paroxysms were first diminished by it, and, I have no doubt, that it contributed to the beneficial effect of the prussic acid. The three first cases, are, I think, very conclusive as to its value; and, if further experience confirms them, we shall possess a means of cutting short this disease in adults, who, when attacked, suffer so severely.

One word as to the mode of exhibition. In order to avoid the possibility of an overdose, I have never given the chloroform on a handkerchief or by means of an inhaler, but have directed the mother (in the case of young children) or the patient, to spill a little, say about thirty drops, in the palm of the hand, and hold this before the mouth and nose sufficiently near to inhale it fully, but not so close as to exclude a portion of atmospheric air. The best time to begin is just as the patient feels the irritation in the chest increasing to a cough, but if possible before the cough commences, and the inhalation should be repeated with each return of irritation, unless headache be produced.—*Monthly Journal of Med. Science, Aug.* 1853, *p.* 180.

40.—ON THE TOPICAL TREATMENT OF HOOPING-COUGH.

By Dr. Eben Watson, A.M., Professor of the Institutes of Medicine in the Andersonian University, Glasgow.

[Dr. Watson considers that, in this disease some morbific agent first induces inflammation of the pharyngeal and bronchial mucous membrane; and, secondly, irritation of the pneumogastric nerves. The difference between this disease and bronchitis being that, in the latter, the irritation is weaker, merely producing the expulsatory effort termed a cough; while in the former, it is so intense as to produce, again and again, a spasmodic closure of the glottis, whence the peculiar phenomena of the disease. Dr. Watson, further, is of opinion that if we can remove these conditions by any kind of treatment—the poison being eliminated—we prevent its reproduction. He then observes:]

Let us now consider shortly in what way the solution of caustic, ap-

plied to the interior of the pharynx and larynx, acts in curing the local effects of the poison of hooping-cough. M. Joubert seems to think that the topical remedy only affects the inflammatory state of the mucous membrane, and the excessive secretion of mucus which results therefrom, and to which he attributes the spasmodic element of the disease. I have not been able to see his memoir, which is published in the 'Recueil des Travaux de la Société Médicale de l' Indre et Loire, 1er et 2de trimestre de 1851;' but the following passage sufficiently indicates his opinion. "M. Joubert n'a pas, du reste, été conduit à employer ce traitement dans la coqueluche par le désir de modifier l'élément spasmodique en agissant sur les nerfs qui se distribuent aux voies respiratoires, mais seulement par l'idée théorique de modifier la disposition en vertu de laquelle s'opère la sécrétion morbide, à la présence de laquelle il attribue la toux convulsive." ('Bulletin Général de Thérapeutique, tome xlii. p. 41.') Now, as the only disposition in the mucous membrane which determines the secretion is its inflammatory excitement, so it is upon that alone that M. Joubert considers the topical remedy to act. Nor do I seek to dispute the fact that such an action is effected, nay, that it is *first* effected in every case of hooping-cough in which the topical treatment is employed. But if the case be well watched, it will be found that, after the inflammation of the pharyngo-laryngeal mucous membrane is subdued, and after the expectoration has diminishe din amount and bulk, the hoops continue, though, in general, they are less frequent and less severe. In most cases, the remedy must yet be continued for a short time before the cure can be accounted complete. When, however, the inflammation of the larynx or trachea happens in any case to be peculiarly severe, the cure by topical means is always postponed for a longer time than usual; and this would seem to show that the nervous or spasmodic element seldom gives way before the inflammatory.

Not long ago, I treated two children in the same family, who were attacked at the same time by the hooping-cough. The one was a baby at the breast, and was very severely affected, insomuch that his life was for a time in danger. I began the topical treatment about the middle of the spasmodic stage; and in eight days he had ceased to hoop, and in a short time to cough at all. His sister, the other patient, was about two years and a half old, and apparently much less severely affected with the hooping-cough; but she had just recovered from an attack of croup when she was seized with that disease, and at first her cough had much of the croupy sound. I treated her *pari passu* with her brother, and yet her disease continued two weeks longer than his.

On the other hand, I have known of cases irregularly treated by the topical method, in which the inflammatory element was subdued, and in which the hooping continued, though in a mild degree, for a considerable time longer. But the most convincing proof that the solution of caustic has a decided and sedative influence on the spasmodic element of hooping-cough, or, in other words, on the excited state of the extreme branches of the vagi nerves in the throat and larnyx, is the fact, which my experience demonstrates, that the topical plan is most speedily effectual in the last stage of the disease, when all the previous symptoms

of inflammation have disappeared, and the hoop alone remains. I have seen a number of such cases, in which the children seemed worn out by the disease, and in which general remedies had been long but vainly employed. In all these cases, the very first touch has a markedly beneficial effect; and its repetition for a comparatively few times suffices to perfect a cure.

When, however, we remember how much the nerves of any part are implicated in its inflammation, it may be, after all, that the affection of the pharyngeal and bronchial nerves, which occasions the spasmodic paroxysms of hooping-cough, is of the same nature; and that we are warranted in agreeing in the main with M. Joubert, that the topical application of solution of caustic operates solely in subduing inflammation. Since, then, that morbid state exists in the bronchial mucous membrane as constantly in cases of spasmodic asthma as in those of hooping-cough, the rationale of the topical remedy becomes reduced to the counteraction of only one morbid state; and we may call it an antiphlogistic sedative of the pharyngo-laryngeal mucous membrane. But this, in my opinion, can only be said with truth of the less sthenic degrees of inflammation, as I have explained in another paper ('Dublin Quarterly Journal of Medicine,' August, 1852). The practical rule, however, remains importantly true, that the remedy should be continued so long as the slightest hoop is heard, although all the ordinary symptoms of inflammatory action, such as bronchitic râles or bulky expectoration, have been subdued for some time. If this rule is not strictly attended to, a relapse will ere long be the consequence; and the treatment will have to be continued nearly as long as if it had never been commenced at all. But if the disease be thus thoroughly subdued in its first attack, no recurrence of it need be apprehended during the patient's life. I make this statement in full knowledge of the succeeding history of all the cases in which I have employed the topical treatment; and many of them have been again freely exposed to infection.

Regarding the mode of prosecuting this topical treatment, I may now be allowed to make a few remarks, suggested by the statements or objections of other physicians, which I have either read or heard expressed in conversation.

1. The most convenient instrument for applying any solution to the throat or larynx, is the sponge and whalebone. The forceps suggested by Dr. Cotton, and which has one limb covered with sponge, is needlessly complicated, and much more apt to injure the delicate glottis. Nor is it fitted to obviate the supposed danger of the detachment of the sponge in the windpipe of the patient, which gave rise to the idea of Dr. Cotton's instrument at the first. It is, indeed, quite a mistake to think that there is any strain upon the sponge, when once it is within the larynx. That organ cannot contract so as to detain the sponge; and it must have been very carelessly fixed on the whalebone, if the glottis could detach it during its withdrawal. Indeed, a skilful operator will seldom feel the contraction of the glottis at all; for, as the patient inspires immediately on the introduction of the sponge into the larynx, the muscular valve becomes relaxed and permits its easy withdrawal. The strong contraction which I have myself often felt, and which I have known

many to mistake for that of the glottis, is in reality a proof that the sponge is not in the windpipe at all, but is caught by the pharynx immediately behind it. And this gives colour to the amusing story of the musician, whose larynx was being touched by a learned physician, who, on withdrawing the whalebone, found it destitute of the sponge. The physician was in great alarm; but the patient neither choked nor died. Ere long, however, he vomited the sponge from his stomach. It had been caught by the pharynx, and swallowed.

If the instrument is at all well made, this could never happen, except from one circumstance, which ought to be known by every person who attempts the topical treatment of the larynx, especially among children. It is, that the caustic solution in a short time destroys the thread with which the sponge is fastened to the whalebone. The simple and certain way, then, of avoiding any such accident as that to which I have been referring, is to have the sponge frequently renewed.

The ordinary strength of the solution which I have used in the treatment of hooping cough, is gr. xv. of the nitrate of silver to the ounce of distilled water; but, in some cases, I have with advantage increased it to ℈ij. of the salt in the ounce of water. From an enlarged experience of the treatment in question, I can now be still more precise; for I have found that in the early stage of the disease and just in proportion to the intensity of the inflammatory process which may be present, so ought the solution employed to be proportionally *weak*. Afterwards, when the nervous symptoms preponderate, the solution may with advantage be strengthened; but it is impossible to lay down rules that will universally apply to different cases, or even to the same case on different days. This must be left to the judgment of the practitioner; and he will find it quite necessary, for the favourable progress of the case, that he should use his discretion in regard to it, as much as to the administration of emetics or laxatives.

3. Dr. Scott Alison has lately drawn the attention of the profession to the application of several other substances to the larynx; and perhaps some of them, such as solution of morphia, may be occasionally used with advantage in cases of hooping-cough. I merely make this as a suggestion; but I have from some little experience of its effects, a better founded opinion of another substance, which has not hitherto, I believe, been used as a topical application to the larynx. I refer to the hyposulphite of soda and silver, to which my attention was first directed by a notice in the 'Medico-Chirurgical Review' (No. xxii., p. 567.) This salt has a very soothing effect on the larynx when its lining membrane is irritated by a vitiated, and, as is generally the case, an acid secretion; and I entertain the hope that its solution will form a useful topical application in the first stage of hooping-cough. I intend, however, in due time to lay before the profession a fuller account of a trial, which I am at present making, of the value of this salt in laryngeal cases.

4. In some cases of hooping-cough, an obstacle is presented to the topical treatment, by a state of matters which is, in other respects, by no means unfavourable to the patient. I mean the irratibility of his stomach, which makes the slightest touch of the sponge in the throat the signal for violent retching and vomiting, if the stomach be full. I

very often, therefore, find it necessary to prescribe for this symptom frequent small doses of heavy magnesia, combined sometimes with a few grains of the trisnitrate of bismuth. Such simple treatment seldom fails to mitigate the vomiting sufficiently to admit of the continuance of the topical applications.

5. These applications should be renewed at least every second day; but, if their commencement has been delayed till the disease is at its height, or if the hoops are very violent from the first, they should be repeated more frequently: and, for the reason stated above, the time of making them should be selected so as to have the stomach empty; and the patient should not be allowed to eat for an hour or two afterwards, else the feeling of rawness in the throat, which follows each application of the remedy, will be unnecessarily increased, and occasionally hooping and vomiting will be induced.

6. In making these applications of solution of caustic to the throats of children, everything in the shape of a formidable spatula should be dispensed with, and either a common teaspoon, or the index-finger of the left hand, should be used. In all cases in which it is important to pass the sponge into the larynx, I consider it quite necessary to introduce the finger into the patient's mouth, and to touch with it the tip of the epiglottis, along the surface of which the instrument may be glided down with certainty to the rima glottidis. And if this proceeding be performed at once with firmness, few children either can or will resist it by struggling, or by biting the operator's finger; but much patience and tact is sometimes necessary to school them to submission in the beginning of the treatment. After a few times no more trouble is experienced.

Pursued in this way, with these precautions, and with a prudent attention to the diet and regimen of the patients, the topical treatment of hooping-cough wonderfully shortens the disease, and renders it nearly as mild as ordinary catarrh. Complications seldom occur, and thus the disease is stripped of its most formidable characteristic.—*Association Med. Journal, Aug.* 26, 1853, *p.* 750.

41.—*Treatment of Aphonia.* By Dr. Bennett.—In cases of aphonia dependent on chronic inflammation of the fauces and larynx (not tubercular) the treatment by means of a strong alcoholic solution of iodine (ʒj. to ℥j.) painted very freely over the throat, externally, has appeared to be extremely successful. The cases which we have especially observed have been under Dr. Bennett's care; and in some of long-standing this form of counter-irritation has seemed to be very superior to that by blistering. In the class characterised by a thickened and mammillated state of the pharyngeal mucous membrane, although the iodine is still useful, yet the topical application of a solution of the nitrate of silver is also and more especially indicated.—*Med. Times and Gazette, July* 23, 1853, *p.* 90.

42.—CASE OF LARYNGEAL DISEASE, IN WHICH THE OPERATION OF TRACHEOTOMY WAS PERFORMED.

By Henry Smith, Esq,, Surgeon to the Westminster General Dispensary.

[Mr. Smith was summoned to a gentleman on the evening of March 11, as it was anticipated some operation might be required to relieve the obstruction to the breathing produced by an attack of laryngitis. Mr. Hunt, the family surgeon, had applied the usual remedies, but the case becoming more urgent, Dr. T. Thompson was called in. On consultation, although it was considered scarcely prudent to operate at that time, yet it was deemed advisable that Mr. Smith should remain near the patient, lest it should suddenly become requisite. Mr. Smith says,]—

At four o'clock on the following morning, I was hastily called to the patient, and found him in the middle of a severe spasmodic seizure, the distress of breathing being very urgent. A sinapism relieved this for a time, but the symptoms shortly returned, and at six another terrible attack of dyspnœa occurred. During this the patient was compelled to sit bolt upright in the bed, and his distress was evinced by the forcible extension of the arms, clenching of both fists, by the lividity and anxiety of the countenance, and the urgent endeavours to get air. I applied water as hot as could be borne by means of a sponge to the throat, but this did not give any relief; and it appeared to me that it would not be justifiable to delay the operation longer; accordingly, I dispatched a messenger for Mr. Hunt and Dr. Thompson. During the time he was gone, the distress of the patient became so urgent, that his wife implored me to operate at once. On their arrival, the spasm had, in a measure, abated, but it was considered that it would not be safe to expose the patient to another of these fearful attacks; accordingly, the operation was determined upon. It was my wish that some chloroform should be inhaled by the patient, and Dr. Thompson cautiously administered that agent, but its influence was different to what was expected; insensibility was not produced, and the respiration, instead of being tranquillised, became more laborious, frequent, and spasmodic; the face became more livid than it was before; the muscles of extraordinary respiration were thrown into violent action; the sterno-mastoid on each side stood out in bold relief thereby deepening the fossa of the neck. Without delay, I cut deeply through the tissues over the lower part of the trachea, separated the muscles with the point of the finger, made a hit at the tube, and fortunately opened it in the middle line without wounding any vessel of importance. Some mucus and blood obstructed the opening at first, and, for a few moments, the patient appeared to be in a most critical position; the pulse sank, the face became livid, and the respirations almost entirely ceased, but cold water was dashed violently over the chest, and the orifice in the trachea was kept patent by the handle of the scalpel. In a short time the breathing became more free, and in a few minutes the alarming symptoms went off, and I was enabled to insert an ordinary silver canula, upon which the relief was immediate. I do not think that more than half a minute elapsed from the time the operation was commenced until the incision was made into the trachea.

During the day the relief continued most striking; the patient even

became jocose. He partook freely of beef-tea and wine. A grain of calomel was given every four hours, and a full opiate was exhibited at night. About four, a.m., on the 13th, the patient, after having been calm, hastily jumped out of bed before he could be restrained, had a copious evacuation from the bowels, which had been acted upon by the calomel several times, with difficulty got back into bed, and rapidly became delirious. He tossed about from side to side, the brow became fiercely knitted, the eyes stared wildly, and he dashed me away from him with all his strength, and appeared to be rapidly sinking. I examined the tube, and finding that the air did not readily enter, passed a probe through it, and brought away a pellet of hardened mucus, when these distressing symptoms subsided, the delirium ceased, the patient became calm, and shortly fell asleep. At six, Dr. Thompson and Mr. Hunt joined me, and the patient continued pretty well; but, just as we were about to separate, another seizure of the same description, but less distressing, occurred; the tube was again examined, and another pellet of mucus was removed. Air entered pretty freely, but it was evident that there was obstruction, and it now became a question as to whether the tube should be removed or not. I was somewhat fearful, from previous experience, that if the tube were removed, there would be a difficulty in re-inserting it, and that in the critical state of the patient, he might be destroyed if any such difficulty should present itself; the other gentlemen felt the same; therefore I requested the opinion of Mr. Fergusson. Before this gentleman arrived, the patient had again become better, had fallen asleep, and awoke sensible, and stated that he felt more comfortable. However, Mr. Fergusson, on carefully examining the patient, considered that it was necessary to remove the tube. It was, therefore taken out, and on examination was found to be partially blocked by viscid mucus. Fortunately another was inserted without much difficulty, care being taken to keep the edges of the opening in the trachea apart by means of blunt hooks. The breathing now became quiet, and the countenance lost its livid appearance; but another source of danger presented itself; for within the last few hours excessive swelling of the upper part of the neck had come on, and an erysipelatous redness was diffusing itself over the chest below the wound. Large quantities of wine, beef-tea, and chloric ether were were given, and the patient was most assiduously watched. A stick of nitrate of silver was drawn over the margin of the inflamed skin. The calomel was omitted.

14th. The patient had some nice sleep during the night. The countenance is more natural; the erysipelas has not spread beyond the line of the nitrate of silver; there is a great deal of irritating cough, and a considerable discharge of mucus from the wound. At mid-day, the patient had a sudden attack of difficulty of breathing, which rendered it necessary to remove the tube; it was cleaned and re-inserted, upon which the breathing became calm, and the irritation was lessened. Beef-tea, wine, and other stimulants are freely given.

15th. After taking a dose of laudanum last night. he had some sleep; and this morning he feels better. Pulse 100. full, and soft; respirations easy, eighteen in the minute; tube cleaned and re-inserted.

16th. Not so well to day; there have been violent paroxysms of cough, and an immense discharge of purulent matter from the wound; he consequently passed a bad night, and is irritable and depressed. The erysipelas has again begun to spread over the chest, and has reached the right axilla. The tube was removed from the trachea, and left out for a short time, and the irritating cough ceased; tube cleaned and re-inserted; opium, wine, and beef-tea are freely given.

17th. Slept pretty well occasionally during the night, but the paroxysms of cough have been frequent and violent, and the discharge of matter from the wound is larger in quantity, thinner, and slightly tinged with blood. Tube to be removed and kept out, and the edges of the wound to be kept apart by two bent probes, tied behind the neck. Erysipelas stopped by the nitrate of silver.

18th. Passed a better night; breathes freely through the opening without the tube; on closing it with the finger, great distress is produced, and he can only take a few inspirations by the natural passage; pulse 80.

19th. I was called to this patient in the middle of the night, and found him in a distressing state of dyspnœa,—indeed, as bad as before the operation. On examination, I found that the opening in the trachea was almost entirely blocked up by thick mucus. This was cleared away; the patient was immediately relieved, and he has, for the first time, this day taken some solid food. He is assiduously watched night and day.

20th. Again I was hastily summoned, late last evening, as another attack of dyspnœa had come on. On my arrival, I found the patient better, but ascertained that he had been nearly suffocated, and that he would probably have died, had not a relation, who was a medical man, been in the house, and cleared the wound, which had become blocked up. It being evidently unsafe to dispense with the tube, I re-introduced it, and gave a large dose of laudanum. The patient's mind was at once tranquillized.

22nd. He has been progressing favourably since the tube was re-introduced, but there has been considerable tracheal irritation, and, therefore, it was left out the whole of yesterday; but to-day, the tracheal irritation, which had considerably lessened when the tube was removed, again came on; consequently, I re-inserted it, and the irritation ceased at once.

Yesterday he sat up for an hour. As there is evidently considerable thickening about the larynx, hyd. cum cretâ is given in doses of three grains every four hours.

25th. Has been progressing favourably; is getting up his strength; sits up three or four hours daily; mouth is affected by mercury; can breathe more freely by the natural passage; the tube is cleaned and re-inserted every day.

April 8. It is now a month since the operation; the patient is so much better, that he breathes pretty comfortably for at least ten minutes together when the opening is closed; but the tube cannot be dispensed with, as the noisy sound in the breathing indicates considerable narrowing at the entrance of the larynx. Counter-irritation, by means of

blisters and croton oil, has been employed, and, the patient being weak and nervous, takes quinine thrice daily.

20th. As regards general health, this patient may be deemed convalescent, as he has regained his strength and flesh to a considerable extent; but the remains of the disease in the larynx still persist, and render necessary the use of the tube; for, although he can breathe a considerable time together with the opening closed, the respirations are noisy, and soon become laborious. In order to permit of more easy breathing, a tube has been constructed, with a very large opening on the convex surface, and, at the same time, a stopper has been made to fit in the anterior opening; by this means the patient can close it at will, and the air passes more readily in and out of the lungs than it would if there was simply a tube in the larynx, without an opening on its upper surface. He exercises his breathing in this way for some time together, and gets more confidence. We are keeping up a little counter-irritation over the throat.

May 1. This patient has been enabled to take carriage-exercise continually, and has been doing well until the last few days, when he has been thrown back in consequence of a domestic misfortune. The tube is worn with great comfort. There is occasionally a considerable secretion of thick pellets of mucus from the trachea. Dr. Thompson has carefully inquired into the condition of the larynx by means of the stethoscope, and is of opinion, from the noisy sound heard during respiration over the glottis, that there is still considerable narrowing at the entrance of the tube; consequently it has been determined to put the patient fully under the influence of mercury again; accordingly he is taking it twice daily.

25. He was brought fully under the influence of mercury, and the gums were kept sore for some length of time; but the disease in the larynx has not been removed by it, only somewhat lessened. The mercurialisation had the effect of weakening the patient very much; it also was followed by severe periosteal pains. The patient has, during the last month, been enabled to attend to his business. A respirator is worn over the tube, and his neckerchief is so adjusted, that its presence cannot be detected by ordinary observers. He has now retired into the country to spend the summer, and it is hoped, that, in course of time, the remains of the thickening, which undoubtedly exists in the larynx, may gradually be removed, and thus permit the entire disuse of the tube, which could not at present be dispensed with. I must not omit to state, that a very careful examination of the lungs has been made on several occasions, and that there is not any evidence of disease there. The chest expands well, even when the artificial opening is closed.—*Med. Times and Gazette, July* 9, 1853, *p.* 34.

43.—ON THE PATHOLOGY OF PHTHISIS.

By Dr. Cornelius Black.

[The following is an abstract of Dr. Black's researches into the pathology of pulmonary consumption:]

Assuming that the first substantive deflection from the standard of perfect health is in a deficient vitality of formative elements of the blood, the origin, manifestation, and progress of pulmonary consumption are briefly enunciated in the following propositions:—

1. That pulmonary consumption observes three stages.
   a. The stage of Local Predisposition.
   b. The stage of Deposition.
   c. The stage of Germination.

2. That the stage of local predisposition is characterised by more or less excess of blood in the pulmonary capillaries of the affected part; that it corresponds to the first pathological condition of bronchitis and of pulmonary cellulitis; that the degree and extent of this local predisposition vary considerably; and that the resulting phenomena bear a proportionate ratio in point of severity and appreciability.

3. That the stage of deposition is attended by increased exudation from the pulmonary capillaries; that this exudation is incapable of entering into structural relation with the pulmonary tissues; that it leads to a more or less rapid thickening of the basement structure of the bronchio-pulmonary membrane; that it likewise accumulates in the intervascular and intercellular spaces; and that the pulmonary tissue is thereby more or less consolidated.

4. That the first appreciable sign of the stage of germination is a shedding of the epithelium of the affected portions of lung; that this epithelium does not attain perfect mucus-cell development; that in cases in which the deposition has been slow, it (the epithelium) is more granular than are properly developed mucus-cells; but that the epithelium is still more granular in cases of rapid tubercular deposition.

5. That the epithelium thus shed is not, in progressive tubercular disease, replaced; that, so long as a particle of healthy basement structure exists, the nuclear points of that structure attempt to replace such lost epithelium; but that this properly vitalised basement structure failing before such attempt at the restoration of the epithelium has succeeded, the latter is now cast off in the form of basement patches, which show, here and there, a germinating point.

6. That the tubercular deposit undergoes, during germination, more or less development into cells; that this growth constitutes the "softening" of authors; that it takes place contemporaneously throughout each isolated and individual mass of tubercle; that it, therefore, does not first commence at either the centre or circumference of the exudation; but that it proceeds more rapidly at the circumference, because at this point the conditions of cell growth are more abundant than at the centre. At the circumference, therefore, plastic and pus-cells abound; at the centre, exudation cells.

7. That in the cheesy-looking portions of tuberculous sputum there are very frequently, indeed, portions of nerve tubes, and occasionally of lymphatic vessels and of the minute bronchi; that, in other portions of such sputum, plates of cholesterine, the colouring matter of the bile, cystine, and urate of ammonia are occasionally seen by the microscope.

8. That the microscopic appearance of the nerve-tubes thus expelled shows that the nerves do not terminate in loops upon the pulmonary

mucous membrane, but in bulbous expansions, to be hereafter depicted.

9. That the foregoing observations show pulmonary consumption to consist in anormal nutrition, and to be essentially analogous, in its steps, to inflammation; but that the term "inflammation" would be inapplicable to it, inasmuch as it fails to explain the cause of the deficient vitality of the blood-plasma, which constitutes the essential nature of tubercle.—*Association Med. Journal, Sept.* 9, 1853, *p.* 799.

DISEASES OF THE ORGANS OF DIGESTION.

44.—ON THE CHEMISTRY OF DIGESTION.

By Dr. G. E. Day.

[Our readers can hardly fail to appreciate the following elaborate review of Professors Bidder and Schmidt's work on 'The Digestive Fluids and Metamorphosis of Tissue,' and of Dr. Carpenter's 'Food and the Digestive Process,' by Dr. G. E. Day, the esteemed professor of medicine, at St. Andrew's. Of the different secretions employed in the digestive process, that of the salivary glands comes naturally to be considered first. The principal use of this would appear to be to promote the conversion of the *amylacea* into dextrine, sugar, and lactic acid, and thus promote the absorption of this class of foods.]

The first point we shall notice is the time required for the metamorphosis of starch by human saliva (the mixed secretion). If we take a fresh decoction of starch, prepared with distilled water, and proved by Trommer's test to be free from sugar, and if we mix it with an equal quantity of fresh saliva, and agitate the mixture, it will instantly lose its viscid character, and become thin and watery; on testing a small quantity of it for starch, we find that iodine no longer induces the well-known reaction, while, on the other hand, the rapid reduction of oxide of copper (in Trommer's test) affords indisputable evidence of the presence of sugar.

The almost instantaneous induction of this action is a point which must not be overlooked, in considering the question whether this is a special property of the saliva, or whether it is shared by other animal fluids. There can be no doubt, as we shall presently show, that in this respect the pancreatic and the intestinal juices exactly coincide with the saliva; but when we find stress laid upon the circumstance that many organic substances—as, for instance, nasal mucus, pieces of kidney, putrefying serum, &c.—produce similar changes in eight or twelve hours, at 100° or upwards, we may recollect that at such a temperature, and after so long an interval, changes may be spontaneously set up in a solution of starch. There are, however, a number of animal substances which occasion the appearance of sugar in a solution of starch, in so short a period as altogether to exclude, in such cases, the suspicion of spontaneous metamorphosis; but the action induced by the saliva is incomparably more rapid even than that of any of these substances.

[We may ask, are the secretions of the three sets of salivary glands of equal importance in producing the final result?]

The following are the two principal conclusions at which Bidder and Schmidt have arrived in connection with these points:

1. They agree with Bernard in regarding the parotids as *glandes aquipares;* in short, as yielding a secretion which is unquestionably intended to moisten and saturate the dry food, but whose principal object is connected with the general metamorphosis of the fluids within the body, and which is devoid of any marked action on starch.

2. By the union of the submaxillary secretion and that of the buccal mucous membrane, there is formed that peculiar ferment which almost instantaneously converts starch into sugar. This active principle is not contained in the cells or other solid particles suspended in the saliva; for the filtered fluid exhibits an undiminished force; and, indeed, this property is not destroyed when, by the addition of a little alcohol, we precipitate the mucus and (entangled in it) these solid particles.

There is still considerable obscurity and diversity of opinion regarding the question, whether the action of the saliva on starch is continued in the stomach. Jacubowitsch, Frerichs, and Bence Jones believe the metamorphic process is continued in the stomach, and Lehmann and Carpenter support this view, while the experiments of Bidder and Schmidt lead to an opposite result.

[It would appear from these experiments that starch should be rapidly converted into sugar in the stomach; but in animals, where it has been introduced artificially, the result has afforded a conclusive demonstration that no conversion into sugar takes place in this organ.]

Now, seeing, in the first place, that the formation of sugar commences in the mouth immediately upon the starch coming in contact with the saliva, and further bearing in mind that no sugar can be usually detected in the stomach, it follows that one of two things must occur—either that the newly-formed sugar is at once absorbed, or that it is converted into lactic acid, and in this form mixes with and is lost in the gastric juice. In the latter case, we must ascribe to the gastric mucous membrane the power of instantaneously converting sugar into lactic acid—a power which as we learn by experiments, is possessed neither by the stomachs of herbivora or carnivora; in the former case we can only say, that so rapid an absorption is perhaps the least improbable mode of explanation.

We are bound to remark, that the above opinion of Bidder and Schmidt, regarding the absence of sugar in the gastric contents of animals fed upon starch, has not met with universal acceptation. It is true that it is in accordance with views previously expressed by Blondlot, and by Bouchardat and Sandras, but it is opposed to the results obtained by Frerichs, (who "in at least fifty experiments" constantly found sugar in the filtered contents of the stomachs of men, carnivorous and omnivorous mammalia, and birds), and to those of Jacubowitsch.

The secretion of the *glandular apparatus* embedded in and forming the chief bulk of the mucous coat of the *stomach* next claims our atten-

tion. Many of our best recent observers (amongst whom we may especially mention Hübbenet, a pupil of Bidder and Schmidt's) believe that two perfectly distinct secretions are found in the stomach—namely, the true *gastric juice* and *gastric mucus*. Almost all observers since Beaumont have agreed in describing the former as a clear aqueous or only slightly viscid fluid with a strong acid reaction, and devoid of morphological elements—that is to say, of *essential* morphological elements; for on a microscopic examination, a few solid particles, consisting partly of unchanged cells of the gastric glands, partly of the nuclei of these cells, and partly of fine molecular matter, which is produced by the disintegration of these elements, may usually be observed; it is only secreted during the period when digestion is actually going on, and it is this fluid alone which possesses any true digestive power. All that is known of the latter (the mucus) is, that it accumulates in the empty stomach, that it is neutral (unless when slightly alkaline from the commixture of saliva), and that it exerts no solvent action on the protein-compounds. Frerichs, however, whose views on the Chemistry of Digestion are entitled to the highest respect, holds a different view, and maintains that at the commencement of each act of digestion the round cells in the interior of the glands escape in excessive quantities, and form a stratum of about a line in thickness, which has been hitherto regarded as mucus, and which either invests the interior of the stomach, or surrounds the contents in the form of a white membrane, the latter being especially the case when dry food is taken. The gastric cells become gradually disintegrated during the continuance of the digestive process, and thus afford a continuous source of pepsin or ferment. The digestive act being accomplished, the gastric glands collapse, and in that state no nuclei or cells, and only a few scattered granules, escape from them. During abstinence from food, the morphological elements are again perfectly formed, and the tubes become filled with cells, which probably in very prolonged fasting again become disintegrated.

There are two points in connexion with the secretions of the gastric mucous membrane to which Kölliker has directed special attention, and and which we will now lay in a condensed form before our readers.

The first is, that *in many of the mammalia the gastric mucous membrane is covered with a more or less thick coat of mucus during digestion.* This fact was originally noticed by Eberle in the stomachs of rabbits, and he clearly regarded the mucus as essential to digestion.

[The gastric mucus can scarcely be regarded as essential to the digestive process, except that it may possibly exert a peculiar influence in certain parts of the stomach. The gastric juice is acid, unless there be an excess of mucus, when it may be neutral, or when a large quantity of saliva is swallowed, when it may be alkaline. It contains a free acid, a highly nitrogenised matter, termed 'pepsin,' or, more recently styled, 'ferment substance.' It is perfectly astonishing how enormous have been the labours of these indefatigable labourers, MM. Bidder and Schmidt. They have recorded no less than 45 series of experimental inquiries, embracing 140 individual experiments.]

Their experiments lead to the following conclusions:—

The admixture of saliva with the gastric juice is of no service, in so far as the solution of albuminous bodies is concerned. It appears, that in experiments with gastric juice containing saliva, the number expressing the dissolved per-centage of dry albumen was not so high as in corresponding experiments (both sets of experiments being made within the stomachs of dogs) when the saliva was excluded. Whilst in the latter the averages of nine experiments of two hours', nine of four hours', and nine of six hours' duration were 29, 62, and 76 per cent., in the former they were only 26, 45, and 65 per cent. This difference is unquestionably dependent upon the partial neutralization of the free acid of the gastric juice by the saliva.

Both classes of experiments agree in showing that the acid gastric juice possesses a specific and peculiar power of dissolving coagulated albumen; and if this solution proceeds with more rapidity in the stomach than externally to the organism, the reason is, that in the former the albumen is kept in constant motion. and is being always brought in contact with fresh quantities of gastric juice. Several of Bidder and Schmidt's experiments show, that provided a sufficient quantity of pepsin be present, the digestive power of the gastric juice varies in a direct ratio with the amount of free acid that it contains. That the solvent power of the gastric juice is not solely due to the presence of hydrochloric acid is, however, evident from the results of several experiments, which showed that this acid, in a diluted state, could only, at the most, exert one-fourth part of the solvent action on coagulated albumen which was exerted by the gastric juice itself. The neutral or alkaline gastric mucus of fasting animals dissolved only very slight quantities of albumen, but on adding hydrochloric acid the activity of the fluid was at once augmented. On neutralizing the free acid of the gastric juice with potash, its digestive power is destroyed.

With regard to the effects of filtration, they observe that repeated experiments have convinced them that gastric juice from which all undissolved organic matters have been separated acts with the same efficiency as that which has not been filtered. This is obviously at variance with the view held by Frerichs, that new ferment continues to be developed from the cells contained in the gastric juice by the action of the free acid.

The experiments on concentrated and diluted gastric juice led to no definite result: indeed, no experiments seem to have been made with the concentrated fluid till it had been re-diluted with water.

It was proved by several experiments that the solvent action of the gastric juice is destroyed by rapid ebullition, or by evaporation at a boiling heat—an additional illustration of the well-known fact, that ferments are decomposed at an elevated temperature. This may possibly be the basis of the universally recognised dietetic rule, which declares all very hot foods or drinks to be injurious. On the other hand, the solidification of the gastric juice by artificial cold did not destroy its solvent powers—a circumstance which may be consolatory to those who are addicted to ices.

It was distinctly shown by three experiments, that the admixture of bile with the gastric juice—even when the quantity is so small that the

mixture retains a distinctly acid reaction—completely destroys the solvent power of the latter secretion upon coagulated albumen.

The quantity of the gastric juice secreted in twenty-four hours was determined by Bidder and Schmidt, in the case of dogs, to be about one-tenth of the whole weight of the body. Assuming the same ratio to be true for men, a man of ordinary weight (say from ten to twelve stone) would daily secrete no less than *from fourteen to about seventeen pounds of this fluid.* This is a very different estimate from that formed by Lehmann, whose calculations were based on the following data:—

100 grammes of the fresh gastric juice of a dog cannot, according to Lehmann's experiments, effect the solution of more than 5 grammes of coagulated albumen (calculated as dry),

An adult man receives into the stomach about 100 grammes of dry albuminous matter in twenty-four hours.

Hence, to digest this quantity, there must be secreted 2000 grammes, or four pounds of gastric juice.

We now proceed to the consideration of the *bile*—a subject to which Bidder and Schmidt have devoted much experimental labour.

The first question they consider is the following:—Is the bile to be regarded simply as an excretion? This point they have attempted to decide by observations on dogs in whom biliary fistulæ had been established.

A dog on whom this operation was performed lost two-fifths of its weight in thirty-four days, although its appetite was increased rather than diminished. The emaciation was especially marked both in the loss of fat and muscle. The hair fell off at many spots, or was loosened by the slightest touch. Digestion appeared to go on in an undisturbed manner, although the animal was in the habit of licking the bile as it escaped. The excrements had a greyish-yellow, and sometimes a partially green colour; but during the last few days of life regained their normal colour and odour. There were constant eructations of a bad odour, and the breath likewise had a very unpleasant smell. The urine was occasionally so concentrated, that its specific gravity was 1·050. The animal at length (on the thirty-fourth day) died from general exhaustion. Dissection showed that a minute new ductus choledochus had become formed, probably between the twenty-first and twenty-fifth day after the operation, at which time the fistulous opening presented a tendency to contract. The right half of the stomach presented numerous ecchymoses, both of older and of more recent standing, although there were no symptoms of disturbed gastric digestion during life—that is to say, there was no vomiting, and the appetite continued unimpaired. The rest of the intestinal tract presented nothing abnormal, except that it was of a somewhat deeper red tint than usual.

A second dog, similarly treated, did not present a voracious appetite, or exhibit the same amount of flatulence, or such a tendency to putrefactive decomposition as the former animal; but in the course of twenty-seven days (when it died) it had lost about one-half of its weight. Except that the fat and the muscles had almost disappeared, none of the organs were found to present any marked peculiarity.

Since the quantity of bile that escaped from the system in these two cases was not compensated for by the additional food that was taken, the idea suggested itself that the emaciation and the disturbed condition of the metamorphosis going on within the tissues might be due to the continuous drain upon the system. This view was confirmed by the two following experiments, in which this disturbing cause was eliminated:

A dog, whose spleen had been extirpated, and in whom a biliary fistula had been established fourteen days afterwards, took such large quantities of food as more than to compensate for what was lost by the escape of bile. Its bodily weight, under these circumstances, did not materially diminish during the space of two months, at the end of which it was killed. The normal development and power of the muscles were retained, but the fat had gradually disappeared. Putrefactive decomposition of the excrements, and abundant flatus of a disgusting odour, were likewise observed in this case.

A very emaciated dog, whose spleen had not been extirpated, and in whom a biliary fistula had been established, regained its healthy appearance and its previous normal weight nineteen days after the operation. During this period it took more meat and bread than were requisite for it in its perfectly healthy condition. The ductus choledochus subsequently became re-established, and the weight then again materially increased.

From these experiments, it seems clear that the question which they attempt to solve cannot be directly and positively answered either in the affirmative or the negative. By an artificial interference with the organism (by the establishment of a biliary fistula) the bile may be reduced, in a certain sense, to the condition of an excretion, if the loss thus occasioned to the system at large can be suitably covered. If this compensation be impossible, the derivation of the bile from the intestinal canal and its direct external discharge in a comparatively short time induce fatal emaciation and debility. For the full comprehension of the question in all its bearings, we should know the quantity of bile secreted in a given time and the average amount of solid constituents which it contains, the share which it takes in the process of digestion, the changes which it undergoes during and after its resorption into the blood, and lastly, the form in which it is finally eliminated from the organism.

In the strict sense of the word, we can hardly regard the bile as a digestive fluid. There is no special class of substances whose solution is dependent upon it. If, as certain experiments show, animals with biliary fistula can live even for years, the function of this fluid in digestion must, at all events, be a limited, and probably only an indirect one; and this is confirmed by the fact, that the secretion of bile does not attain its maximum till twelve or fifteen hours after food has been taken, when by far the greatest part of the ingesta must have passed beyond the duodenum; hence the greatest part of this fluid enters the small intestine at much too late a period to exert in it any great influence on the metamorphosis of the chyme.

[From trials upon various animals it has been ascertained that although the *pancreatic juice* exerts no solvent action in albuminous

bodies, it yet acts with extreme power in converting starch into dextrine and sugar.]

Bernard, about four years ago, discovered that remarkable fact, that, externally to the organism, the pancreatic juice possesses the property of decomposing the neutral fats into their base and acid.

The only unquestionable action of the pancreatic fluid is that which it exerts on starch; but since the relative size of the pancreas is greater in carnivorous than in herbivorous animals (the weight of this gland being one-three-hundreth that of the whole body in dogs and cats, and only one-six-hundredth in that of rabbits), and since, further (as has been shown by Bidder and Schmidt's experiments), the greater part of the amylaceous food of the sheep is converted into sugar before it enters the duodenum, we may fairly conclude that the principal uses of this secretion are still unknown.

There are far greater difficulties in obtaining pure *intestinal juice* than in procuring any of the secretions we have previously considered. The most recent investigations on this subject are those of Frerichs (contained in his article on Digestion), and of Zander (a pupil of Bidder and Schmidt's, who have themselves continued and extended his researches), and their conclusions are, upon the whole, very discordant.

All that we can say with certainty with regard to the physico-chemical properties of the fluid is, that after filtration it is a tenacious, ropy, colourless, and strongly alkaline substance.

According to Frerichs, the intestinal juice exerts no change on any of the ordinary elements of food. Protein bodies and gelatigenous substances remained perfectly unchanged; fat became disintegrated in the same manner as in all other viscid fluids; neither, according to Frerichs, does it exert any special action on starch. Hence he denies to the intestinal fluid any action as a direct digestive agent. Lehmann, on the other hand, found that the intestinal juice possessed, in a high degree, the power of converting starch into sugar; but protein bodies and fats were so little affected by it, that he doubts whether it exerts any digestive action on these substances, and the more so, since cubes of coagulated albumen and pieces of flesh, when introduced into the gut of a hospital patient through a fistulous opening, were expelled from the rectum almost entirely unchanged. The fistula was, however, in the lower part of the ileum, and probably near the cæcum. Finally, the results of experiments on nineteen cats and two dogs have convinced Zander and Bidder and Schmidt, that the intestinal juice exerts a solvent action on albuminous bodies, scarcely inferior to that of the gastric juice, and a sugar-forming power on starch scarcely inferior to that of saliva or of pancreatic juice.—*Brit. and For. Med.-Chir. Review, July* 1853, *p.* 171.

45.—ON DEGENERATIONS OF THE GLANDULAR STRUCTURE OF THE STOMACH.

By Dr. C. Handfield Jones, F.R.S., &c.

[It is somewhat singular that of all the writers who have expressed their opinions on the diseases of the stomach, none of them appear to

have carefully investigated the changes occurring in its mucous membrane. And yet]

The mucous membrane of the stomach is a true gland structure, essentially different from that of the intestine; its follicles are not mere involucra of the surface, they possess a much higher function than that of merely secreting mucus. Examination of a vertical section of the healthy tissue shows that in the greater part of its extent it is made up of parallel tubes ranged side by side, and so close together that there are scarcely any interspaces discernible. These tubes are nearly of the same size as, and altogether very similar to, those of the kidney; the chief difference is, that they are more filled with epithelium, and do not exhibit a distinct central canal. They terminate as they reach the corium of the mucous membrane by blind extremities, which are often bulged, and sometimes slightly branching. Above, they open into shallow fossulæ, which are well represented in Bowman and Todd's 'Physiology,' vol. ii, p. 193. These fossulæ are lined by an epithelium consisting of columnar particles, while that which fills the tubes consists of nuclei imbedded in granulous matter, and very numerous large nucleated cells full of granulous contents. This gastric glandular epithelium differs from the renal in this important circumstance relative to the discharge of its function, that it does not remain, like the latter, attached to the basement membrane, the wall of the tube, but is thrown off and constitutes itself a part of the secretion. In the pyloric region, the fossulæ are very much deeper, and the entering tubes much shorter; while low villi, containing single capillary loops, spring from the partition walls of the fossulæ. In the other regions of the stomach there are no true villi, but a deceptive appearance is occasionally presented by papilloid masses of altered epithelium exuding from the tubes.

One morbid condition which is not uncommonly observed, is an atrophic state of the lower ends of the tubes and of their epithelium. The latter, then, consists of course granular matter, with a few stunted, starved-looking nuclei and cells which often contain oily molecules. The lower blind ends of the tubes are faintly marked, and sometimes are evidently tending to disintegrate; at the same time the interspaces between adjacent tubes were wider, as if some had already disappeared. In some cases the epithelium is altered, containing no healthy cells, but filling up the tubes with a coarse granular matter, while they themselves are not atrophied.

A fatty change in the epithelium is not uncommon, and in some degree is scarcely to be regarded as of pathological import. The lower ends of the tubes in our domestic animals are often quite opaque from the presence of much oil in the epithelium: there is, however, in such instances, no indication of wasting or breaking up of the tubes. Sometimes the glandular tissue seems to undergo what may be called true fatty degeneration: the tubes lose much of their natural aspect, and become converted into cylindrical tracts of granular matter loaded with oil drops. When the epithelium is in a fatty state, the inner surface of the stomach will often be found to be of a dead dull white colour; and it is rather remarkable that sometimes the change is confined to patches

of varying extent, perfectly circumscribed. This change in the colour of the stomach is noticed by Andral as the result of chronic gastritis.

Together with a varying degree of atrophic change in the tubes themselves, there is often observed a remarkable alteration of the submucous tissue, or rather of the areolar tissue which forms a kind of corium to the mucous membrane. On viewing a vertical section, masses of nuclear particles are seen heaped up among the fibres, where they come in contact with the blind ends of the glandular tubes; these increase, and advance upwards between the tubes, and occasion or coincide with their atrophy. The masses of nuclei are separated from each other, a certain space of healthy tissue intervening between them. The spots occupied by the nuclear deposits are sometimes depressed, so as to give rise to an appearance of open follicles. In an extreme instance the nuclear deposit has so increased as to cause almost a complete atrophy of the tubes, debris alone of which can then be discerned amid the altered intervening tissue. Vascular injection is by no means a constant accompaniment of this condition; and when it exists, it has not appeared to me at all clear that it was not of a passive kind. Together with the nuclei there is a certain quantity of granulous matter, which varies, however, in amount; it is not generally enough to conceal the nuclei.

Sometimes the exudation shows some tendency to the production of fibroid tissue, but I have never seen this developed in a very marked manner. Perhaps, however, contraction of the surrounding areolar tissue may have been the cause of the peculiar alteration observed in the following instance.

In a female, of thin and spare habit, who had been ailing two years, and who died of bronchitis with emphysema and dilatation of the heart, the liver was in a highly nutmeg state, and its Glissonian sheaths were considerably thickened; the kidneys were not healthy, and they contained reddish yellow pigment, the sign of former extravasations of blood. The mucous membrane of the stomach in the region adjoining the pylorus had a mammillated aspect, and was of a reddish brown colour. It was covered over with small, indistinct, sometimes whitish eminences, which were very apparent on a vertical section as whitish grain-like masses in the deeper parts of the mucous membrane. These masses consisted of tortuous tubes crowded and packed together, and filled with an epithelium consisting of small sized cell particles containing oily molecules, and of free nuclei imbedded in abundant granular matter. The basement tissue of the tubes was distinct in the masses, but could not be traced upwards to the mucous surface. In fact, the convoluted tubes seemed quite destitute of any outlet for their contents. The masses were separate from each other, and were closely girt by layers of fibroid tissue which seemed to compress them. In their intervals there was no trace of tubes. The epithelium of the surface preserved its usual columnar form.

I subjoin further details of the examination of some instances of the degenerative changes in the gastric mucous membrane above described.

A pallid, ill nourished female, aged 22, who had long suffered with epigastric uneasiness and bad digestion, died of phthisis and bronchitis. She had been fifty-one days in the hospital, and had undergone the ope-

ration for ruptured perineum, which proved quite successful. The contents of the stomach were acid. Some portions of the mucous lining were of a dead white, and presented the appearance of numerous quasi-follicular orifices; the rest was of a faint reddish grey tint. There was no vascular injection anywhere. The white parts of the mucous membrane showed on a vertical section parallel rows of tubes filled especially at their deeper parts with oil laden cells of very perfect form and great consistence; these cells contained oil dots, opaque and black (but not drops), imbedded in much granulous matter. Besides the cells, the contents of the tubes consisted of free nuclei and granulous matter. The tubes were not broken up; but every here and there the row was interrupted, and there was left an empty looking space, which was occupied either by remains of tubes atrophied and containing merely a faint granulous matter, or by a mass of nuclei only. In one section the tubes existed only at the upper half or two-thirds of the vertical extent of the mucous membrane, while at the lower they were atrophied and replaced by a mass of nuclei. It was these interruptions in the continuity of the tubes which gave the appearance of follicular orifices. In the pale non-whity portions of the mucous membrane the epithelium was much less fatty.

A man, aged 63, died with empyema, the consequence of an accident which had fractured several ribs. The cornea presented distinct arcus seniles. There was but slight fatty change of the muscular fibres of the left ventricle. The kidneys were not quite healthy; there were cysts on their surface. The inner surface of the stomach was of a pale colour, rather uneven; the mucous membrane to the eye was not much altered, but under the microscope the tubes were found to be extremely wasted, and in many parts quite lost, and replaced by a granular and fibrous tissue containing multitudes of ill-shaped nuclear particles. In some parts there were groups of convolutions and bulgings of the tubes, stuffed with an opaque granulous and oily matter. The atrophy of the tubes was extremely marked. There was fibrinous deposit in the spleen.

A female, aged 19, died with syphilitic phagedena of the genitals. The stomach presented a natural aspect, with the exception of some slightly raised spots of the size of a pin's head in the vicinity of the pylorus. These seemed to be produced by accumulations of epithelium in the fossulæ. The tubes in this part were in a normal state. In the mid-region of the stomach the tubes were much wasted, those remaining only contained a granulous and oily matter.

In a middle-aged female, dying with scirrhus pylori, the stomach was found distended to some extent; its muscular coat was much hypertrophied; its mucous membrane apparently healthy. On closer examination, the lower ends of the tubes near the pylorus were seen to be aggregated into bunches, while in other parts they were very indistinct, evidently atrophied, and surrounded by intertubular exudation, consisting of nuclei and granulous matter. In one section, two large cysts were seen, full of a transparent fluid, and lined by a delicate vesicular epithelium. They lay in the substance of the mucous membrane. The kidneys were granular and cysted. There was considerable fibroid thickening of the capsule of the spleen, and some also of that of the liver.

A man, aged 51, addicted to drinking, and subject to gout, died with double pneumonia, pleurisy, and pericarditis, after five days' illness. The kidneys were healthy. The stomach appeared markedly mammillated in its mid-region; it was not injected. The tubes appeared pretty natural, but were obscured by an interstitial exudation, developing itself into nuclei and granulous or perhaps indistinct fibroid matter: at one part there was a large nodular accumulation, consisting solely of nuclei. From this mass, the nuclear deposit extended in smaller quantity among the tubes, and would, at a later period, have no doubt occasioned their atrophy. The mucous membrane of the fundus was red and softened; but its tubes were quite natural, and unobscured by any intervening exudation. The pyloric portion, like the cardiac, showed no trace of mammillation: there was, however, in this part very considerable intertubular fibroid formation, with infarction of the lower ends of the tubes by oily and granular matter; and gathering up of their lower parts into bunches. Many tubes in this part were also atrophied, so that a section no longer presented a continuous row.

In a female, aged 43, who died of uterine cancer, the mucous surface of the stomach was of a dead whity colour throughout. The tubes were not wasted, but were filled with a very opaque fatty epithelium. In the mid-region, towards the greater curvature, there was a marked mammillated aspect; this very nearly disappeared after dissecting the mucous membrane from the submucous, and spreading it out. It was probably caused by some irregular contraction. The liver was excessively fatty.

A female, aged 87, died with universal jaundice; the femur was fractured by a fall some days before death. The liver was somewhat granular on the surface, and the Glissonian sheaths appeared somewhat thickened. The ductus communis choledochus was obstructed at its lower part by a soft mass of biliary pigment matter; the gall-bladder was hence enormously distended. The kidneys were wasted and granular. The stomach was very large; the mucous membrane was quite pale, but not manifestly unhealthy to the eye. Under the microscope, it was seen to be gravely altered; there was very little trace of tubes to be discovered even on repeated examinations; here and there were some traces of them, but in by far the greater part of the tissue they had perished. Their place was occupied by a quantity of nuclear particles, granulous and some oily matter, and occasionally fat vesicles. The formation of nuclear particles had extended quite into the corium of the mucous membrane.

A man, aged 37, died with general peritonitis, after the recto-vesical operation, undertaken in consequence of the urethra being obliterated by stricture. The stomach appeared natural to the eye. In the middle and the splenic regions, the epithelium of the tubes consisted of small, stunted, atrophied particles, appearing more like empty vesicles than anything else; it was not fatty. In the pyloric third, the epithelium was not atrophied; large granular round and oval cells were present in the exuding contents of the tubes, besides free nuclei and granulous matter.

A stout man, aged 52, in apparent health, died with extravasation of

blood within the cranium, after a blow. The mucous lining of the stomach had a dead white appearance, and seemed to be irregularly mammillated, or as if its surface was every here and there somewhat elevated. The epithelium of the tube was much atrophied; it consisted of stunted cells, granular matter, and ill-developed nuclei. The tubes themselves were wasted in some degree; their deep ends were most affected, and lay imbedded in a stratum of granular matter, containing numerous nuclear particles, which infiltrated the areolar tissue. Acetic acid brought the intertubular nuclei more plainly into view.

I do not intend on this occasion to enter into any detailed examination of the causes and nature of the above changes; I can only state that I am not inclined to regard them as of inflammatory origin. They seem to us to belong much more nearly to the class of pure and simple degenerations, occurring as primary morbid phenomena, from the decay of vital power. Hyperæmia has not appeared to form any constant or necessary element of these textural changes. In the case of the nuclear formations, it is clear that there is intertubular exudation; but we have no evidence to show that it is the product of inflammatory action; I should rather consider that, owing to derangement of the natural assimilative power, the plasma, which should have formed healthy epithelium and other structures, was developed into these abnormal organizations. The morbid action seems to acknowledge a relation to cirrhosis of the liver, and to changes of the like kind. The newly formed fibroid tissue in cirrhosis is often loaded with nuclei, quite similar to those produced in the gastric masses. It is of course a matter of great difficulty to study satisfactorily the genesis of these morbid states; for, although there is strong ground for supposing that they exist in many of the multitudinous valetudinarians who are the commonest subjects of medical treatment; yet, as such individuals live on for years, and often die of some acute malady, there is seldom an opportunity of examining the organ affected while the change is in progress. To this subject I hope to devote much attention in future years, and shall be very thankful to any *confrère* who will furnish specimens and brief histories of the symptoms existing during life.

The practical results which the above investigation, as far as it has extended, supplies are—1. That we may expect not unfrequently to meet with cases where the digestive power of the stomach is permanently weakened by the decay of more or less of its glandular structure. 2. That, in a still greater number of cases, the digestive power is weakened from an atrophy of the epithelium, which, it is conceivable, may, by judicious administration of light nourishing food, cod-liver oil, and gentle tonics, be reproduced in a more healthy state. 3. That we must be cautious in leeching or blistering epigastria for the removal of *gastritis*, which may have no existence. The further our observation extends, the more do we become convinced that the most hopeless diseases with which we have to contend are those depending on essentially chronic degenerations of organs. Who would not rather have to deal with an acute pneumonia or pericarditis, than with a case of confirmed morbus Brightii? How often does our healing skill hang its head in hopeless foreboding when our diagnosis has revealed the existence of an organic lesion! This must of course often be; but how needful then does it become that we

should be thoroughly aware of these degenerative tendencies, and exercise the utmost vigilance to anticipate and stay those destructive changes which we are unable to reverse.—*Association Med. Journal, Oct. 7, 1853, p. 874.*

46.—CASE OF SARCINA VENTRICULI OF MANY YEARS' DURATION, TREATED BY THE HYPOSULPHITE OF SODA.

By Dr. R. Neale, late Physician's Assistant, University College Hospital.

[The patient in this case, 9 years since, was first seized with vomiting; after having suffered from pains in the abdomen for some time previously. During the last three years, however, the vomiting has become much more frequent—three or four times a-week—the vomited matters being like "beer grounds," and intensely acid. The pain, however, has decreased.]

Examination of Fluid vomited Feb. 1, 1853.—Quantity about Oij. Thick, viscid, adherent as synovia, being with difficulty poured out of a wine-bottle. Aspect peculiar, the upper portions being "barm or yeast-like," the lower more resembling gruel. Re-action very acid. The microscope exhibited numerous sarcinæ with the yeast-plant, and sporules of the penicillum glaucum.

On Feb. 23rd he commenced treatment. To save space, I may say, that he was ordered the diet of a patient suffering from diabetes mellitus, with the following medicine:—

℞. Ammon. sesquicarb. gr. iij; inf. quassiæ ℥j. Ft. haustus ter die sumendus.

℞. Sulph. sublim. ʒj.—ʒij. pro re natâ si alvus non soluta sit.

On Feb. 23rd, previous to commencing the above, a careful examination was made of the fluid ejected the previous day.

Chemical Characters, &c.—Not viscid; diffluent as water; opalescent; no yeast appearance. On being poured,

1. Into a glass, the upper part, after standing an hour, appears like pale milk and water; when held up to the window, cannot discern bars through it. Smells acid, not unlike the well-known odour of brewing. Re-action intensely acid, effervescing with carb. soda.

(a) A portion being boiled in a test-tube, becomes slightly clearer, due to fat rising and forming a ring on the surface, and a slight (albuminous) deposit falls.

(b) Nitric acid, added cold, no change; hot, the fluid becomes slightly yellow (carbazotic acid); clears more than in (a).

(c) Muriatic acid: cold, no change; hot, as in (b), excepting the yellow colour is not produced.

(d) Acetic acid: cold, no change; hot, as in (c).

(e) Liquor potassæ: when boiled with one third vol. of liq. pot., the usual indications of the presence of sugar. The man had not been forbidden that article of diet previous to the examination.

2. The sediment of the fluid, after standing an hour, occupies about 1-20th of the glsss, and is quite white.

Microscopical Examination.—1-4 object glass, No. 2 eye-piece, equal to 500-600 diam.

1. Supernatant liquid: drops taken from surface and several inches below, contain only oil-globules and sporules of fungi in great abundance, with a few epithelial scales; no sarcinæ.

2. Sediment: made up of immense multitudes of epithelial scales, sarcinæ, sporules of penicillum glaucum (?), with a few pieces of muscular fibre here and there; besides which last objects, were others of the same reddish colour, unstriated, irregular in shape, and apparently made up of an innumerable multitude of minute specks not larger than pins' points when magnified with this high power. At first they were believed to be portions of muscular fibre partially decomposed; but further examination negatived this view. There appeared to be transition forms between these masses and the true sarcinæ. Have they anything to do with the reproduction of the latter? No torulæ seen in field. Size of sarcinæ, 1-666—1-500 inch diam.

March 2. Much the same; if anything rather easier since taking the sulph. and ammonia.

A table, exhibiting at a glance his state up to the time of commencing the hyposulphite, and kept by himself, will, when compared with another, kept since that period, show the effects of the remedy more strikingly than making a daily report of the case. The first of these tables will be found at the end of the report of March 23.

Urine about a pint, straw-coloured, very faintly acid; sp. gr. 1031; a white flocculent precipitate of 1-12th its volume. Liquor potassæ gives, when boiled with it, a slight brown colour. The microscope shows only a very few crystals of uric acid, mixed with epithelial scales. Ejecta watery, less opalescent than last report; quantity about two quarts; intensely acid; sp. gr. 1016. When boiled with liquor potassæ, does not become so brown as does the urine.

Microscopical Characters.—Sarcinæ very abundant, larger than last report, and of various shapes, mixed with epithelial scales; also large, dark, round masses, together with others less regular in shape, of the same general aspects, exactly resembling the compound crystals of uric acid and urate of ammonia, figured in Dr. Garrod's plate of the urinary deposits. The murexid test carefully applied, showed the presence of abundance of uric acid in the ejecta.

23rd.—To-day saw the patient, who says he feels better; the bowels are not so costive since taking the sulphur, and the motions are neither so black nor so hard. On the 17th he passed a very white motion, he says; he has not vomited for nearly a week, but has not yet commenced the hyposulphite, since I was anxious once more to examine carefully the ejecta before he did so, to determine, if possible, the nature of the singular masses noticed in last report. He has not taken the ammonia mixture for nearly a week. Yesterday (22nd) he vomited about a quart of whey-looking fluid, with a thin stratum of fat on the surface, and depositing a light-coloured sediment of one-fourth its volume. Re-action intensely acid, smells strongly of sulphur, due to medicine; sp. gr. 1020.

Microscopical Characters, 500—600 *diameter.*—A drop of the sedi-

ment contains numerous sarcinæ, but not so numerous as last report: also many of the "round balls" insoluble when boiled in hot water, varying in size from 1-1000 to 1-400 inch diameter. When held to the light, these "balls" glitter just like the ordinary crystals of uric acid. They have no resemblance to the balls composing sulph. sublim. which he is taking. When rubbed between two pieces of glass, they give a sensation of grittiness; unaffected by acetic acid, hot or cold. Nitric acid dissolves most of the largest balls; does not affect (apparently) many of the smaller ones.

A few drops of sediment, evaporated carefully after the addition of a drop of nitric acid, and afterwards exposed in the usual way to the vapour of ammonia, give the characteristic murexid tint. None of the irregular masses were noticed in the field.

Urine acid, much more so than last report; amber-coloured, with a copious light pink deposit; sp. gr. 1035; quantity Oij.

℞. Sodæ hyposulph. ʒiv.; infus. quassiæ ℥xij. Ft. mist. cujus capiat cochl. j. magn. ter die.

Diet as before.

April 2. To-day saw patient, who came six or seven miles, and appeared fatigued by the journey. He states, that he feels decidedly better since the change in medicine, and that his symptoms are altered in many respects; he certainly appears much improved in his general aspect. Still complains of costiveness and sickness, but says the ejecta are much altered to what they used formerly to be, and are not nearly so abundant.

Examination of Matters Vomited.—Thin, pale, slightly opaque, very acid, with a thin white scum on surface, and a slight white deposit on standing. Sp. gr. 1015. Boiled with liq. pot., becomes reddish-brown, showing a moderate amount of sugar to be present. The "scum," under microscope with former power, exhibits numerous fungus sporules and many "round balls," but no sarcinæ. "The sediment" consisted of numerous epithelial scales, sporules, "large round balls," some irregular in shape. Here and there in the field were scattered deep blood-red balls, or cells, one two-thousandth to one one-thousandth inch diam.; in some cases aggregated in masses. Sarcinæ not nearly so numerous as formerly, and their crucial markings are far more distinct than ever they have yet appeared. The middle portion of the fluid contained merely fungus sporules. Urine Oiss. to Oij., acid, more so than formerly. Sp. gr. 1050. With liq. pot., gives plain indications of the presence of sugar. Under the microscope, exhibits only a few octohedral oxalates.

℞. Sodæ hyposulph. ʒvj. inf. quass. ℥xij., ℥ss. ter die; diet as before

May 2. Better; not seen. Rep. mist. ut antea.

5th. Saw patient to-day at his own home, he being too weak to visit me; states that, when he last came (April 2), the walk much fatigued him, and that he has since suffered from severe prostration. The sickness has greatly abated, and the vomited matters are greatly altered in appearance, not at all like the "yeast vomit." He discontinued the mixture a fortnight before the 2nd inst., but not the sulphur, which he

continued to take as an aperient. He did not take any other medicine except a simple aperient powder.

℞. Sulph. præcip. ʒj. ad ʒiss. pro re natâ, et omit. sulph. sublim.

℞. Ol. jecor. aselli ℥j. ter die. Pergat in usu mist. ut antea.

14th. I received the following letter:—

"Since taking the oil and the fresh kind of sulphur, together with the mixture, I have been a great deal better, and have nothing to send you (ejecta). My stomach and bowels have been very easy, and motions more regular."—*Med. Times and Gazette, June* 18, 1853, *p.* 624.

47.—REMARKABLE CASE OF FOREIGN BODIES IN THE STOMACH AND DUODENUM.

By John Marshall, Esq., Assistant Surgeon to University College Hospital.

[The patient, Mrs. B—, æt. 41, was in December 1842, a fortnight after the birth of her fifth child affected with hæmatemesis, vomiting a wash-hand basinful of blood. The succeeding faintness and prostration were extreme, and her recovery was very slow. Mr. Marshall continues:]

In the autumn of 1845 I found her complaining of frequent sickness, with pain at the epigastrium, and in the left groin. On examining the abdomen, I discovered a hard tumour in the left iliac fossa, which moved freely across the abdomen, as she turned from side to side. The size and shape of this tumour were very like an ordinary placenta, one edge much thicker than the other; the thickest edge much harder, and imparting to the fingers the feeling of its being very heavy. She stated that she had felt this substance for some months, and whenever she turned in bed it always moved, and caused nausea, but gave her no pain when she was quiet, nor was it tender to the touch. She suffered much from flatulence, and pain between the shoulders shooting through to the left breast. The catamenia had not appeared for three months, and she believed she was pregnant. The bowels were torpid, and she was obliged frequently to take her usual aperient of blue pill and colocynth. The nausea increased, and the stomach rejected everything; large quantities of a green ropy mucus, occasionally with blood, were thrown up, all of which was carefully examined, without detecting anything which would throw light on the case. Numerous remedies were employed to allay her distressing sickness, but were all equally unavailing, and the emaciation and exhaustion became so great, that her death was daily expected. One teaspoonful of pale brandy was now given every hour, and not an atom, or drop of anything beside. From this time the vomiting ceased. After continuing this for two days, a little food was allowed, and she gradually gained strength and flesh, and in four months was able to walk two miles, and looked almost as well as usual.

During this illness, Dr. Cowan of Reading, visited my patient; he was greatly interested in her case, and expressed himself to be as much

puzzled as I was respecting the nature of the tumour, which he compared to a cannon ball rolling across the abdomen.

Nearly five years elapsed before any serious symptoms returned. The pain between the shoulders was often complained of, and there was occasional sickness. Much difficulty was experienced in keeping the bowels in order; the secretions were generally healthy in colour, and formed. Occasionally the face and limbs became œdematous, but an aperient pill, with a little gin in gruel taken at bedtime, would always remove these symptoms in two or three days. The catamenia never returned after the illness of 1845.

On the 8th of October, 1850, I again saw her in consultation with Mr. Corsellis, of B—. From him I learned that she had been ill three weeks, that all her old symptoms had returned. Incessant vomiting, with pain between the shoulders, had reduced her to a state of great weakness and emaciation. A few hours after my visit, severe spasmodic pain came on in the bowels, and quickly terminated her sufferings.

Post-mortem.—Eighteen hours after death, with the assistance of Mr. Corsellis, I examined the body. The thoracic viscera were healthy, and free from adhesions. On opening the abdomen the stomach was found drawn down to the pubes, and in its form resembled a champaign bottle. The pyloric end lay beneath the arch of the pubes, and the duodenum under a portion of the sigmoid flexure of the colon, from which it was traced to the pancreas, which was drawn down considerably out of its normal position. The liver was large, and paler than natural. The gall-bladder distended with bile. The spleen and pancreas were healthy, but small. The kidneys rather hypertrophied. The bladder small. The uterus and ovaria healthy. The intestines were of very small calibre. The cæcum and colon resembled the small intestines, the bands and sacciolated appearance being scarcely discernible. The jejunum and ileum containing a little ropy mucus, and there was some fæcal matter in the rectum. No ulceration was apparent throughout the whole length of the intestinal canal, nor was there found the slightest peritoneal attachment or appearance of inflammation within the cavity of the abdomen.

Having tied the œsophageal end of the stomach and the duodenum, I removed these organs. The stomach contained about a pint of semi-fluid matter, and felt very like the crop of a fowl; the duodenum resembled a large sausage stuffed with lead. On cutting into the stomach I found it partially filled with some gruel-like fluid, and in the lower half, —which evidently constituted the tumour during life, an immense number of pins, of a purple black colour, not corroded, varied in size, all bent or broken, many very pointed. The pyloric half of the stomach presented a remarkably thickened condition of the villous coat, being highly vascular, and raised in rugous elevations like the stomach of an ox. The muscular coat also was greatly hypertrophied. The weight of the pins contained in the stomach was *nine ounces*. An incision made into the duodenum *displayed a mass of pins very tightly packed, of various shapes, similar to those found in the stomach, and wholly obstructing the tube.* These weighed a *pound,* as nearly as I could ascertain without removing them.

Her husband could scarcely believe the truth of what he saw, when we showed him the contents of the stomach, for he affirmed that he had never seen his wife put pins into her mouth. A son, 17 years of age, said that he had often observed his mother biting pins, and believed that she swallowed them. She took them out of her thimble with her tongue, having previously bent the head and point together. When his mother corrected him for any bad habit, he would say—Why do you eat pins? This reply always silenced her. He stated that the servants when shaking the carpets frequently remarked on the number of bent pins they found.

Mrs. B— had a keen appetite, and would always partake of any food she fancied, however improper or indigestible. I have known her eat cold boiled pork when unable to raise herself in bed, having four days previously vomited a large quantity of blood.—Of her early history I can learn but little. A sister informs me that, when a child, she was fond of eating starch and slate pencil—and she remembers her biting pins. When seventeen years of age she vomited blood, and remained for some months an invalid, until sent for change of air to Bath.—*Med.-Chirurgical Transactions,* 1852, *p.* 65.

48.—ON INFLAMMATION OF THE LINING MEMBRANE OF THE STOMACH.

By Dr. George Budd, F.R.S., &c.

[Inflammation of a mucous membrane may induce, 1st, Alteration of mucus, rendering it viscid or opaque. 2nd, Effusion of plastic lymph, forming a coating of the membrane. 3rd, Formation of pus. But in all these cases no permanent mischief need follow. For obvious reasons the knowledge of the inflammatory diseases of the mucous membrane of the stomach is very vague. The simplest form is, perhaps, that produced by excess in eating or drinking, and]

The rapid recovery in such cases is owing to the active nutrition of the mucous membrane. In consequence of this active nutrition, the effects of inflammation of the mucous membrane of the stomach are much more transient than those of inflammation of the mucous membrane of the air-tubes, or of the urinary bladder, or of the urethra, or even of the intestines.

The mucous membrane of the air-tubes, or of the urethra, or of the urinary bladder, wastes but little, and is slowly renewed. If it be much injured, the process of repair is long.

The mucous membrane of the stomach, on the contrary, has an active function. Its epithelium is frequently shed to effect digestion, and is rapidly renewed; and, in consequence, the superficial inflammation of it we are considering is very transient.

[Another common cause of this disease is from the imbibition of alcoholic drinks, the intensity depending on the state of dilution.]

The effect of spirits on the coats of the stomach, like that of food

which is hard of digestion, depends greatly on the previous state of the stomach, and of the general health, as well as on season and climate. Spirits hurt the stomach more when its mucous coat is already inflamed, or when, from an impediment to the passage of the blood through the liver or the chest, or from any other cause, the vessels of the stomach are congested, so that liquids are slowly absorbed from it; and in hot seasons, or hot climates. Under these circumstances, small quantities of fermented drinks may do much mischief.

In the observations I have cited from Dr. Beaumont, nothing is more striking than the rapidity with which the stomach recovered, under the influence of low diet and cooling drinks. Without this power of rapid recovery, the stomach would be unfit for its office. If the erythematous inflammation, which is excited by unwholesome food, or by excess in eating or drinking, took long to subside, the abstinence required for recovery could hardly be borne.

The inflammation, instead of subsiding rapidly, may, however, be kept up by repeated indiscretion in eating or drinking. Small quantities of solid food, or of fermented drinks, which, at other times, would do no harm, are sufficient to keep up a soreness that already exists.

The chronic inflammation so excited is attended with an increased secretion of mucus, and causes a thickening, and the so-called mammillated appearance, and occasionally, I believe, minute superficial ulcers of the mucous membrane. Its most characteristic symptoms are, constant slight tenderness at the epigastrium, slowness of digestion, pain or uneasiness in the stomach, and occasional vomiting, after meals, especially after meals of solid food, and a white and furred tongue. The matter vomited contains viscid mucus, which, now and then, presents a few streaks of blood, more or less altered. The disorder, even after it has lasted a considerable time, generally disappears readily if the stomach be allowed sufficient intervals of rest, or the patient be restricted to cooling drinks, and a diet consisting entirely of farinaceous substances and milk.

A superficial, or erythematous inflammation of this kind occurs, not only as a disease by itself in persons otherwise healthy, but also very frequently in the course of various other inflammatory or febrile diseases, when the food has not been brought down to the diminished power of the stomach. Under such circumstances, the inflammation of the stomach is more difficult to recognise, from its symptoms being complicated, or masked, by those of the primary disease. It is thus often overlooked, and much mischief is in consequence done by the unseasonable use of stimulants.

Chronic inflammation of the kind we are now considering sometimes results, not from the digestive powers of the stomach being overtaxed, but from the existence of some impediment to the passage of the digested food from the stomach into the intestine. When, for example, a simple deep ulcer exists near the pyloric end of the stomach, interfering with the action of its muscular fibres, or when the pyloric orifice is slightly strictured, or is pressed upon by a large liver, the stomach cannot always completely empty itself, and what remains in it, after digestion is over, frets and inflames its mucous coat. As the inflammation,

in such cases, results from an abiding condition, it is difficult to remedy, and thus, occasionally, leads to habitual vomiting of ropy mucus. This happened in a woman who died a few years ago, in King's College Hospital, from the effects of a large simple ulcer near the pyloric end of the stomach. Much ropy mucus was vomited for a long time before death, leading to the suspicion of cancer of the stomach, and, after death, ropy mucus of the same kind, hard to detach, was found coating almost the whole surface of the mucous membrane.

In the same way, if the urinary-bladder, or the gall-bladder, cannot completely empty itself, the retained urine or bile, decomposes, or becomes too highly concentrated, and consequently frets and inflames the mucous membrane. Inflammation of the mucous membrane of the stomach would be caused in this way much more frequently if the contents of the stomach could not be discharged by vomiting. The stomach has, fortunately, two outlets for the escape of irritating matters.

The mucous membrane of the stomach may be fretted and inflamed by various conditions besides excesses in eating or drinking, and the swallowing of substances which are hard of digestion, or which exert an injurious chemical action upon it. Among these conditions may be severe or long-continued abstinence. The stomach is an organ whose action, like the actions of the voluntary muscles and the brain, is destined to be intermittent; and when the digestive power is exhausted, a certain period of abstinence, or rest, is required in order to restore it. The first effect of abstinence, is, then, to strengthen the stomach, and enable it to digest a greater quantity of food; but if the abstinence be complete, and exceed a certain limit, the nutrition of the mucous membrane becomes impaired; digestion then grows feeble, and changes in the texture of the membrane take place, which, in appearance at least, are very like those which inflammation produces.

This fact, which has been indistinctly perceived since the time of Hunter, was noticed, a few years ago, by MM. Andral and Gavarret, during a course of experiments to ascertain the influence of various conditions on the composition of the blood. M. Andral says:—

"In some experiments which I undertook with M. Gavarret, for the purpose of determining the composition of the blood in animals deprived of food, one circumstance particularly struck me,—namely, a notable augmentation of the fibrin. My astonishment ceased when, on opening the bodies of these animals, I found in their stomachs evident signs of inflammation, such as bright redness, softening, and numerous ulcerations of the mucous membrane."

He then gives the following details of one of the experiments in question:—Three dogs, in good health, were bled on the same day, the 21st December, 1841, in order to ascertain the composition of their blood, and were then submitted to different degrees of abstinence until they died.

The first was deprived entirely of food and drink, and lived twenty-one days. Some blood was drawn, for analysis, at the end of the first week, and again at the end of the second week, and it was found that the fibrin had increased in the intervals of the successive bleedings from 2·3 parts in 1000 to 3·9 and 4·5 parts.

The second dog was deprived of food, but allowed to drink water, and lived twenty-five days. Like the former, it was bled at the end of the first and second weeks, and the proportion of the fibrin was found to have increased in the intervals of the bleedings, from 2·2 parts to 2·9 and 4·0 parts.

The third dog was allowed a small quantity of soup every morning, and lived thirty-three days. Blood drawn at the end of the first and second weeks had very little more fibrin than that drawn at the commencement of the experiment, but, at the end of the third week, when some blood was again taken, the fibrin was found to have increased from 1·6 parts to 3·3 parts.

M. Andral says that this dog, which was not completely deprived of food, was the only one in which the stomach was not ulcerated, and that in it the redness of the mucous membrane of the stomach was less general and less vivid than in the others.

The last instance shows, that even a small quantity of food, if it contain all the elements requisite for nutrition, may protect the stomach, and prevent those destructive changes which total abstinence causes; and this accords with the well-known fact, that persons who, from a scanty diet, are much wasted, can sometimes, like persons wasted by fever, digest great quantities of food.

The case is very different if a person be long restricted to food, which, whatever be its quantity, is not sufficiently varied for healthy nutrition. If such a diet be persisted in beyond a certain time, the nutrition of the mucous membrane of the stomach is impaired, as by total abstinence, the appetite fails, and digestion is greatly enfeebled.

This was well shown by experiments, first performed by Majendie; and subsequently repeated, and varied, by a Committee appointed by the French Institute, with Majendie at its head, to determine the nutritive properties of different kinds of food. The experiments proved that dogs kept exclusively on water, with the addition of oil, sugar, fat, or even of albumen, fibrin, or gelatine, in their pure state, soon die of starvation just as when kept on water alone.

The subject is further illustrated by the disorders of health that have been observed to occur in prisoners kept on a diet of bread and water.

A good account of these disorders has been given by Mr. Malcolmson, in a letter addressed, in 1837, to Sir Henry (now Lord) Hardinge, on the effects of solitary confinement and a bread and water diet on the health of prisoners in India. He says, "Many men, particularly those of indolent habits, endure a confinement of four or six weeks on bread and water, without injury to their health; but, in some instances, a shorter period *is sufficient to cause a total loss of appetite; the bread is hardly touched, and on other food being allowed, the patient is unable to eat or digest it.* The stomach becomes weak; there is uneasiness across the stomach, spleen, and liver; the latter is torpid. The bowels are confined, or they are relaxed; with slimy discharges, unaccompanied with pain; yet the swollen red tongue indicates the existence of irritation of the mucous membrane of the digestive canal. The pulse is quick and feeble; and the clammy skin, vertigo, debility, headache, and sleeplessness, show how much the constitution suffers from diminished ner-

vous power. The convalescence is slow, and the treatment requires to be adapted to the enfeebled state of the system."

It appears from the instances given by Mr. Malcolmson, that when a man is long kept on such a diet, the health is irretrievably ruined: the subsequent allowance of food sufficient for the maintenance of health does not restore him.

These observations of Mr. Malcolmson are confirmed by the early Reports of the Inspectors of Prisons.

The irreparable injury to the health produced by long continuance in a diet deficient in some of the principles requisite for nutrition, is also well shown in the curious and painful history of Dr. Stark, who, in 1769, when he was pursuing his medical studies in St. George's Hospital, heroically made himself the subject of experiment.

His experiments were commenced on the 12th of June; and, from this time till the 26th July, that is, for more than six weeks, he lived on bread and water only, increasing from time to time the daily allowance of bread from 20 ounces, which he took at first, to 38 ounces. For the next fortnight, from the 26th of July to the 9th of August, he varied the diet by subtracting, first 4, and then 8 ounces, from the 38 ounces of bread, and adding an equal quantity of sugar.

The person upon whom these experiments were made was, to use his own words, "a healthy man, about 29 years of age, 6 feet high, stoutly made, but not corpulent, of a florid complexion, with red hair."

Once, during the course of these experiments, he yielded to his craving for food of other kind, and ate 4 ounces of meat, and drank two or three glasses of wine; but otherwise he adhered rigidly to the diet. On the 9th of August, that is, at the end of eight weeks and two days, he was only 2lbs. less in weight than when he commenced his experiments; but scurvy was making its appearance. The entries made in his journal about this time show that the nutrition of the lining membrane of the stomach and bowels had become greatly impaired. He states, on different occasions, that he had little appetite,—that he ate the latter part of the allowance of sugar with great abhorrence,—that he had pains in the bowels, and frequent liquid stools, which contained some clear, gelatinous substance.

His experiments were pursued, with some slight variation, and the scorbutic symptoms made progress. Subsequently, there occurs the following entry in his journal:

"On the 8th of September, I was so weak and low, that I almost fainted in walking across my room. Had four or five loose stools in the course of the day; was sick; and my tongue was foul."

The experiments were still continued, and the narrative goes on till the month of February, when the Doctor, reduced to a most deplorable condition, fell a victim to his love of science.

It will be seen, that in Dr. Stark, as in the prisoners that fell under the observation of Mr. Malcolmson, the loss of appetite and enfeebled digestion that resulted from the defective diet, were attended by frequent slimy discharges from the bowels. A similar disorder of the bowels was noticed by Majendie in his experiments on dogs, and continually recurs in the early Reports of the Inspectors of Prisons. The insufficient diet

leads, in the bowels as in the stomach, to impaired nutrition, and often to an inflammatory state of the mucous membrane.

Happily, severe disorders of the digestive organs, resulting from insufficient food, are, in this country, extremely rare; but it is probable, that there is some truth in the popular notion, that in persons whose digestion is weak, the stomach is frequently much injured by too long fasting. It has often seemed to me, that a rigid diet, too long persisted in, in the early stage of continued fever, has been productive of much mischief in this way.

Inflammation of the mucous membrane of the stomach may be excited in another way still; namely, by some noxious matter in the blood.

This has been strikingly shown by experiments that have been made on the lower animals for the sake of ascertaining the effects of arsenic. Mr. (now Sir Benjamin) Brodie, in a paper on this subject, published in the Philosophical Transactions for 1812, says:—

"Mr. Home informed me, that in an experiment made by Mr. Hunter and himself, in which arsenic was applied to the wound of a dog, the animal died in 24 hours, and the stomach was found to be considerably inflamed.

"I repeated this experiment several times, taking the precaution always of applying a bandage to prevent the animal licking the wound. The result was, that the inflammation of the stomach was commonly more violent and more immediate than when the poison was administered internally, and that it preceded any appearance of inflammation of the wound." After detailing some of his experiments, Mr. Brodie thus sums up the effects of the poison:—

"These experiments were repeated, and the results, in all essential circumstances, were the same. The symptoms produced were,—1. Paralysis of the hind legs, and afterwards of the other parts of the body; convulsions; dilatation of the pupils of the eyes; insensibility;—all of which indicate disturbance of the functions of the brain. 2. A feeble, slow, intermitting pulse, indicating disturbance of the functions of the heart. . . . 3. Pain in the region of the abdomen; preternatural secretion of mucus from the alimentary canal; sickness and vomiting in those animals which are capable of vomiting;—symptoms which arise from the action of the poison on the stomach and intestines."

The following is the account he gives of the appearances observed on dissection:—

"In animals killed by arsenic, the blood is usually found fluid in the heart and vessels after death; but otherwise, all the morbid appearances met with on dissection are confined to the stomach and intestines. . . .

"In many cases, where death takes places, there is only a very slight degree of inflammation of the alimentary canal; in other cases the inflammation is considerable. It generally begins very soon after the poison is administered, and appears greater or less, according to the time which elapses before the animal dies. Under the same circumstances, it is less in graminivorous than in carnivorous animals. The inflammation is greatest in the stomach; but it usually extends also over the whole intestine. I have never observed inflammation of the œsophagus. The inflammation is greater in degree, and more speedy in taking place,

when arsenic is applied to a wound, than when it is taken into the stomach. The inflamed parts are in general universally red; at other times they are red only in spots. The principal vessels leading to the stomach and intestines are turgid with blood: but the inflammation is usually confined to the mucous membrane of these viscera, which assumes a florid red colour, becomes soft and pulpy, and is separable without much difficulty from the cellular coat, which has its natural appearance. In some instances, there are small spots of extravasated blood on the inner surface of the mucous membrane, or between it and the cellular coat, and this occurs independently of vomiting. I have never, in any of my experiments, found ulceration or sloughing of the stomach or intestine; but, if the animal survives for a certain length of time, after the inflammation has begun, it is reasonable to conclude it may terminate in one or other of these ways."

In another paragraph, he says:—

"The inflammation from arsenic, occupying in general the whole of the stomach and intestine, is more extensive than that from any other poison with which I am acquainted. It does not effect the pharynx or œsophagus, and this circumstance distinguishes it from the inflammation which is occasioned by the actual contact of irritating applications."

These experments of Sir B. Brodie have been repeated by others, with the same results, and have been further confirmed by numerous cases in which arsenic applied to a sore, or to a large surface even of sound skin, or inhaled in the form of vapour, has proved fatal to man. In such cases, unless death occur early from the action of the poison on the nervous system or the heart, pain in the belly, with vomiting and the discharge of mucus from the bowels, almost always comes on; and after death, marks of extensive inflammation of the mucous membrane of the stomach and intestines exist.

It seems probable that this inflammation results from some of the poison being eliminated at the mucous membrane of the stomach and intestines —a membrane which must be regarded, not as a mere lining of the tube, as the mucous membrane of the œsophagus is, but also, as an expanded gland, destined to furnish abundant secretions, and, by virtue of its active secreting power, occasionally instrumental in eliminatfng noxious principles from the blood.

Many other substances, when absorbed into the blood from the surface of the body, have, like arsenic, an especial action on the stomach and intestines. Jalap, for example, purges, and lead excites colic, when applied to a wound. There can be little doubt that some of the noxious principles that may be bred into the body act in a like special manner on these organs, and may excite inflammation or functional disorder of them.

When arsenic is given medicinally, it should be given largely diluted, in order that it may exert no direct injurious influence on the stomach; but when this precaution is adopted, it often happens, after the medicine has been taken some time, even in moderate or small doses, that nausea comes on, with pain and a sense of burning heat in the stomach. These symptoms are usually the earliest distinct indications that the arsenic has been given in too large quantity, and it is very important to

bear in mind that they depend on *inflammation* of the mucous membrane of the stomach. On the occurrence of these symptoms, the arsenic should be left off, but the patient should be kept on a sparing farinaceous and milk diet. The disorder of the stomach will then quickly subside.

If, after the occurrence of the gastric disorder, the use of the arsenic be continued, the sufferings referrible to the stomach increase, and an inflammatory state of the bowels likewise comes on, causing griping pains of the belly, with diarrhœa and the discharge of slimy mucus. The inflammation of the stomach and bowels thus excited seems often not to depend on the direct local action of the arsenic on the coats of the stomach, but on the accumulation of it in the system. The pain in the stomach and nausea seldom come on till the arsenic has been taken for some time; and if, under proper management, they subside speedily, and the arsenic be then taken again, the disorder in most cases soon recurs.

Whenever inflammation of the stomach is excited by some noxious matter in the blood, which must necessarily be conveyed to every part of the mucous membrane, and be carried in the blood to every other part of the body, we may expect the inflammation, like that which results from the absorption of arsenic, to be more extensive than that caused by the mere outward application of an irritating agent, and to be attended by symptoms of inflammation or irritation of the bowels, and by some disturbance of the functions of other organs, which the inflammation of the stomach itself cannot explain.

The gastric disorder in yellow fever and in cholera, which is attended by great congestion of the stomach, and by effusion of fluids from the mucous membrane, which has many characters in common with those states which we designate inflammation, is probably brought on in this way, by the influence of some poison acting through the blood.

Another instance of inflammation of the stomach arising from an unhealthy condition of the blood is that which sometimes occurs in gouty states of the system, when the gout does not fix itself in the limbs, or when it suddenly leaves them.

The stomach is more apt to suffer from the sudden retrocession of gout than any other organ: and two kinds of gastric disorder arising in this way have been recognised.

The first and most common kind usually occurs in chronic gout, and is chiefly marked by a feeling of weakness, or sinking in the stomach, with griping pain and a sense of cramp. The pain is relieved by pressure, and is seldom attended with vomiting, fever, or other symptoms indicative of actual inflammation.

When the disorder has these characters, it is best treated by warm alcoholic stimulants, and by sinapisms, applied with the view of recalling the gout to the joints that have been recently or oftenest affected with it.

The second kind of gastric disorder succeeds active inflammatory gout in the joints, and is marked by severe pain in the stomach, a high degree of fever, and frequent vomiting or retching, often attended by profuse diarrhœa. If the disorder be not controlled, the active febrile symptoms are early followed by a state of alarming and sometimes fatal collapse.

This affection of the stomach is, now-a-days, of rare occurrence, and has not been sufficiently studied. There can be little doubt that the disorder is inflammatory, but that, like gout in other parts, it has characters which may serve to distingush it from common inflammation.

One of the most striking characters of gouty inflammation of the limbs is an abundant effusion of fluid into the synovial capsules, or into the cellular tissue. In gouty inflammation of the stomach, an effusion of the same kind sometimes takes place into the cellular tissue under the mucous coat, causing great thickening of the walls of the stomach. In illustration of this, I here show you a remarkable preparation, which I have found in the museum of the College. It exhibits a considerable portion of the pyloric end of a stomach the walls of which are enormously thickened by what seems to have been coagulable lymph effused into the cellular tissue under the mucous coat. The preparation was left to the college by Dr. Hooper, and is thus described in his catalogue:

"*A Portion of an Adult Stomach.* There is considerable deposition of albumen between the coats—between the muscular and villous coats. The subject was labouring under acute rheumatic fever, with swelling of all the limbs, which suddenly disappeared, and his stomach seized with pain. He became delirious, and lived two days. Mr. Guthrie's stomach had the same appearance."

What is here termed "acute rheumatic fever" was, in all probability, acute gout affecting a great number of joints at once.

This peculiar form of inflammation of the stomach exemplifies a fact which must ever be borne in mind in the consideration of inflammatory diseases, namely, that the course and character, and, in great measure, the event, of inflammation, in any tissue, depend on the nature of the influence by which the inflammation is caused.

When the gouty disorder of the stomach succeeds active gouty inflammation of the joints, and has itself the characters of active inflammatory disease, the most efficient remedies are leeches, or a blister, applied to the epigastrium; abstinence from all stimulating food; effervescing potash-water, in small quantities at a time, to allay thirst; and opium, to alleviate the severe pain, and to support the action of the heart. In conjunction with these remedies, sinapisms or other stimulants should be used, for the purpose of recalling the gout to the joints which it has recently left.

Another form of inflammation of the stomach is now and then met with, in which coagulable lymph becomes effused into the cellular tissue under the mucous coat, which coagulable lymph, if not soon absorbed, hardens and contracts, forming a dense gristly tissue, binding the mucous membrane to the coats beneath. Inflammation having this result, frequently occurs at the margin of old ulcers of the skin; but it often exists also, especially in the neighbourhood of the pylorus, independently of ulceration, or any other permanent change of texture in the mucous membrane. In such cases, the lymph is generally effused pretty evenly in the entire circumference of the pylorus, and leads to the formation of a gristly ring or band, which, by its contraction, permanently narrows or strictures the orifice. This form of the disease seldom occurs till near the age of forty, and is, I believe, almost invariably the effect of spirit-

drinking. It is usually found in conjunction with marks of adhesive inflammation of the liver, spleen, and other organs, which spirit-drinking so frequently causes.

The inflammation most probably involves the mucous membrane, as well as the cellular tissue beneath; and, at its onset, causes, like other forms of inflammation, pain, and tenderness of the stomach, and vomiting. The inflammatory symptoms subside as the mucous membrane recovers; but gradually the lymph in the cellular tissue contracts, and those disorders ensue which a narrowing of the pyloric orifice of the stomach occasions. The food is retained in the stomach longer than it should be; the stomach consequently grows larger, and the patient has an unusual facility of vomiting. Some years ago, I made a *post-mortem* examination of a gentleman who died of granular disease of the kidney, in whom narrowing of the pyloric orifice of the stomach, from adhesive inflammation of the areolar tissue, likewise existed. The only indication of this latter disease was an extraordinary facility of vomiting, which he had long had. He could empty his stomach almost when he pleased; but he sometimes vomited involuntarily, especially after having indulged more than usual in eating and drinking; and, on such occasions, it almost invariably happened, that the liquids he had taken were rejected, while the solids were retained.

When the narrowing of the orifice is greater, and the action of the muscular fibres near the pylorus is impeded, the stomach seldom completely empties itself, and the acid residue of digestion in it ferments, causing heart-burn, sour eructations, and flatulence, and now and then excites inflammation of the mucous membrane. The stomach continues to grow larger, and, as its capacity augments, the vomiting may become less frequent, but more is thrown up at a time, and at length the disease destroys life by impeding the passage of the food into the intestine.

The same symptoms of obstruction are produced by cancer of the pylorus, which occurs at the same age, and from which the disease we are considering is distinguished by the slower progress; by the absence of any perceptible tumour; and by the circumstance, that it occurs almost exclusively in spirit-drinkers.

In some cases, the disease, instead of being limited to the pylorus, extends some distance in front of it, and the morbid changes, as well as the symptoms, are very difficult to distinguish from those of cancer.

During the inflammatory process, the disease, like adhesive inflammation of the liver, is probably much under the influence of treatment. When the inflammatory process is over, and the lymph has become hard and contracted, the treatment can only be palliative. The evils resulting from undue acidity and flatulence may be mitigated by remedies suited to these conditions. Vomiting and other gastric disorders may be lessened by proper regulation of the diet; but the most important point is, to make the patient give up his habit of drinking, and thus to prevent recurrence of the inflammation, and other addition to the mischief already done, than that which time of itself brings.

In the *treatment* of inflammation of the mucous membrane of the stomach, the fundamental point is to give the stomach sufficient intervals of rest, and to avoid irritating it by physic or food. For inflammation

brought on by alcoholic drinks, or by undigested or irritating food, nothing more is generally necessary than cooling drinks, and restriction for a few days to a sparing diet, consisting of light broths, farinaceous substances, and milk. If the inflammation be very severe, causing much pain and tenderness, with a sense of heat at the stomach, and frequent vomiting on the contact of food, leeches may be applied to the epigastrium; the stomach may be cooled, and its irritability much lessened, by sipping from time to time iced water, or by holding pieces of ice in the mouth, and swallowing the water as the ice dissolves; and the diet may be still further restricted. Broths may be interdicted, and, for a few days, nothing more be allowed than the simplest drinks, and those farinaceous substances that are principally composed of starch. In active inflammation of the entire stomach, or when, from any cause, the digestive power is very feeble, there is usually dislike of animal food, and, by a natural instinct, arrow-root, gruel, etc., are substituted for it. Even farinaceous substances, when they contain much gluten, are found to be heavy and oppressive. The peculiar business of the stomach is to dissolve the albuminous constituents of the food. The gastric juice has comparatively little action on the starch, which, consequently, taxes the stomach less, most probably passes out of the stomach more quickly, and is certainly found, when the digestive power is suspended, to be less oppressive to it. As I have before observed, the restoration of the stomach to its healthy condition is greatly promoted by the active nutrition of its lining membrane.—*Med. Times and Gazette, June* 3, 1853, *p.* 565.

49.—ON THE PHYSIOLOGY AND DISEASE OF THE PANCREAS.

By Dr. Bright and M. Bernard.

[In 1832 three papers were read successively before the Medico-Chirurgical Society on this obscure but interesting subject. The authors being Dr. Bright, Mr. Lloyd, and Dr. Elliotson. These gentlemen directed attention to a peculiar and rare symptom.]

"The symptoms to which I refer," said Dr. Bright, who was the author of the first communication, "is a peculiar condition of the *alvine evacuation;* a portion more or less considerable assuming the character of an oily substance resembling fat, which either passes separately from the bowels, or soon divides itself from the general mass, and lies upon the surface, sometimes forming a thick crust, particularly about the edges of the vessel, if the fæces are of a semifluid consistence; sometimes floating like globules of tallow which have melted and become cold; and sometimes assuming the form of a thin fatty pellicle over the whole, or over the fluid parts in which the more solid figured fæces are deposited. This oily matter has generally a slight yellow tinge, and a most disgustingly fœtid odour."

[The importance of Dr. Bright's views as bearing upon recent investigations, will be seen in the following summary of them. He says:]

"When we draw a comparison between the three foregoing cases, a very close analogy, or even identity, in many circumstances, may be traced. In all of them chronic ailment terminated, sooner or later, in jaundice; and in all of them a great peculiarity in the character of the dejections existed. In the result of the examination after death we have likewise some circumstances which coincide in all—*obstructed biliary ducts; the liver gorged with bile; fungoid disease* attacking the *head of the pancreas;* and *malignant ulceration* on the surface of the *duodenum.* The question to be solved is, upon which of the conditions indicated or caused by these morbid changes, if upon either, the peculiarity of the evacuations depended? That the obstruction of the biliary ducts, or even the total absence of all indication of biliary secretion, is not usually attended by the same peculiarity in the evacuations, many cases which have been cautiously detailed by various authors, and many which we have all observed, bear sufficient testimony; and I was therefore induced to ascribe it either to the existence of malignant disease, or to that disease being situated in the pancreas. That the simple fact of malignant disease existing is not *necessarily* productive of such appearances in the feculent matter, I infer from cases both of that form of disease and of melanosis in the liver to a very great extent being, within the scope of my experience, unaccompanied by any such discharge, though the evacuations were submitted to the most rigid observation. That simple ulceration in the bowels, to any known extent, is not attended by any such symptom, I am led to believe, from knowing that neither in the most extensive ulceration of the large intestines in cases of dysentery, nor in the worst cases of ulceration of the small intestines in fever, in diarrhœa, or in phthisis, does anything of the kind usually occur. Whether, however, malignant ulceration of the mucous membrane is accompanied by this symptom I cannot assert, though I have often seen most extensive ulcers of the pylorus and of the rectum, where, although the evacuations were attentively observed, such fatty matter was not detected. As, however, a malignant ulceration of the membrane did exist in each of the foregoing cases, it is not impossible that this was the cause of this symptom; but we must bear in mind that such ulcerations are *by no means* uncommon, and that the phenomenon of which I am speaking *is* uncommon; and that in each of the cases it was accompanied by another morbid appearance, which is not common—namely, the malignant disease of the pancreas. The fact of the intestinal ulceration having, in each case, occupied the duodenum, does, however, somewhat diminish the weight of this observation, for that certainly is not so frequent an occurrence."

Such is Dr. Bright's analysis of the cases adduced by him, in which the peculiar discharge above mentioned—of fat in the evacuations—existed as a positively ascertained symptom. Let the reader not omit to weigh well every assertion and every reservation here set down; we beg to assure him beforehand that not one clause of the above paragraph is superfluous. Dr. Bright then proceeds to analyze several other carefully observed cases, bearing upon the question by the greater or less similarity of their symptoms and morbid appearances, but differing in the absence of "the peculiar symptom." In two of these there were some of the

recognised symptoms of pancreatic disease, and this diagnosis having been made, was negatived by Dr. Bright on the ground of the absence of fatty matter in the evacuations. The negative opinion was correct; but so far from maintaining the reasoning on which it was founded to be unassailable, Dr. Bright, on the ground of later experience, believes his argument to have been in fact fallacious, and proceeds to relate three other cases in which pancreatic disease existed, even associated with a duodenal affection, without the occurrence of the fatty discharge. The first was one in which *the pancreas was completely involved in scirrhous disease, the duodenum thickened, contracted, and cancerous,* but not ulcerated, and *the common bile duct absolutely obliterated at its duodenal extremity.*—(case 6, p. 34.) This case approaches very closely the first three; "the only point of distinction seems to be the condition of the duodenum, which in all the other cases, had been affected by malignant ulceration, but in the present case was only united by the scirrhous disease to the pancreas." It is, however, *barely possible,* that *the fatty evacuation may have occasionally existed, and have escaped observation;* for the case, though carefully watched, was not specially watched in regard to this symptom during life. The next case related is one of *malignant disease limited to the middle third of the pancreas,* with some degree of *contraction of the duct* at the duodenal end; *contraction also of the bile duct* (causing jaundice), and *incipient cancerous thickening of the duodenum.*—(case 7, p. 36.) The alvine evacuations were "clay-coloured and yeast-like; but neither fatty matter nor mucus had been observed to be passed with them, and a few days before death they become very dark." (It is proper to mention that this observation was not made by Dr. Bright himself, nor are the number of examinations nor any of the details stated). The last case was one of *cancerous disease of the liver, involving the capsule of Glisson, the common duct, and the duodenum, which was ulcerated opposite the disease;* the *pancreas* was questionably healthy, but *its duct much obstructed and distended,* behind the obstruction, to the size of "the largest swan's quill."—(case 8, p. 44). This case is earlier in date than all, except the first of those in which Dr. Bright observed the fatty evacuation, and therefore occurred before this symptom could have assumed the importance in his estimation which it afterwards acquired; but he assures us, from his own observation, that "on no occasion was the fatty matter detected, though the character of the stools was frequently noted." He also observes, that the occurrence of fatty evacuations in this case, without their having been observed, is very improbable."

The facts of which we have given above a very brief summary, but which will be found carefully detailed in Dr. Bright's paper, are considered by him as sufficiently to invalidate the conclusion that serious disease or derangement of the pancreas is *necessarily* or *constantly* accompanied by the peculiar symptom to which we have adverted. The strict inductive inference from the whole would be, that the occurrence of fatty evacuations is not necessarily determined by pancreatic disease, or by obstruction of the pancreatic duct, unless such disease or obstruction be such as completely to intercept the function of the organ; and that even in the case of very considerable disease of the entire gland,

the fatty evacuation may be absent, provided the duodenum be sound or not much diseased. Taking these considerations in connexion with those in the paragraph which we have quoted above from Dr. Bright's paper, it will be seen that as he remarks,—

"We bring the circumstances of the diseased structure in connexion with this symptom, within a narrow limit—*disease, probably malignant, of that part of the pancreas which is near to the duodenum; and ulceration of the duodenum itself.* These are the only two conditions which can be traced as being peculiar to all three cases."

[Hence we see that Dr. Bright's researches in 1832, have obtained a position of the greatest historical importance.]

The experiments of Bernard appear to show the remarkable rapidity and power with which the normal pancreatic secretion acts upon the neutral fatty bodies of the aliment, converting them into an emulsion resembling chyle. We say this in the full knowledge that many of the ulterior conclusions of Bernard on this subject have not stood the test of further inquiry, and that the careful and varied experiments of several impartial and well-known physiologists have led to results which must very materially invalidate those to which our scientific neighbours in France have, by their authorized tribunals, given so hasty and unreserved a sanction. After careful consideration of the whole subject, however, we cannot but acquiesce in the conclusion of Lehmann, as well as of Bernard himself, that though many other animal fluids possess the power, in a greater or less degree, of emulsionizing the neutral fats, the pancreatic juice is distinguished by this attribute in a high degree, and therefore is *probably* an important agent in the normal digestion of these bodies. It cannot, indeed, be admitted, as Bernard at first asserted, that the pancreas is the exclusive organ set apart for the decomposition and digestion of the fatty aliments; for the experiments of Bidder and Schmidt clearly prove that the decomposition and saponification of the fats is not a necessary part of the digestive process, and that the presence of the gastric fluid in the chyme tends to prevent that evolution of the fatty acids from their oils which takes place in contact with decomposing animal juices; and moreover, the emulsionizing of the fats and the absorption of milky chyle is proved not to be absolutely dependent on the pancreatic fluid, nor even on the pancreatic fluid and bile conjointly, but to be effected, in a certain measure, by the fluids of the intestine alone. While, therefore, we must admit that the normal digestion of fat is a process to which several *factors*, as it were, contribute—viz., the intestinal juices, and especially those of the duodenum, the pancreatic juice and the bile—it would appear highly probable that the pancreatic juice is among the most important and direct of the agents in the chylification of the fatty matters of the food; and that the bile, though not in itself possessed of much emulsionizing power, contributes powerfully, by an action (as yet imperfectly ascertained) upon the other juices above mentioned, to the digestion of the fatty matters in the duodenum and first portion of the small intestine.

Assuming for a moment the correctness of these propositions it becomes, of course, of the greatest importance to science, to determine

accurately to what extent the subtraction of any of the above *factors* influences the digestion of the fat. This branch of the physiological inquiry has not been neglected by those engaged in it: but the difficulties (as may readily be believed) of submitting some of these questions to the direct test of experiment are almost insuperable, and the results of such attempts appear, at first sight, hopelessly contradictory. Sir B. Brodie, in 1823, asserted that the fatty matters were not digested when the common bile duct was tied, and that the lacteals remained, in such cases, free of milky chyle. The observation was probably correct; but the experiments having been performed on cats, in which the ductus communis choledochus receives the pancreatic duct, as in man, the inference as to the effect of withdrawing the bile from the intestine cannot be admitted; and the subsequent experiments of Blondlot, Magendie, and others, together with numerous cases of jaundice, constantly under the observation of the physician, show that animals can exist for a protracted period without loss of flesh, although little or no bile reaches the intestine, the excrements being usually in such cases devoid of any marked excess of fatty matters, even when ordinary food, abounding in oil, is taken in nearly the usual quantity. Bernard's experiments appear to show, that the digestion of the fat is wholly arrested by the withdrawal of the pancreatic secretion. He has found that the pancreas may be entirely destroyed in dogs, by filling its ducts with oil (an ingenious procedure, capable of being turned to account in further experiments upon this subject), and that the animals so treated remain for a time alive, with a voracious appetite, and capable of digesting food to a certain degree; but that they ultimately die emaciated, that they form no milky chyle, and discharge the fatty matters of the food unaltered, *per anum*. We feel that, in the present state of the inquiry, we are not justified in accepting these statements to the full extent, especially as a quantitative analysis of the ingesta and egesta in these cases might have been easily performed, and would have exactly terminated the extent to which the removal of the pancreas incapacitates an animal for the digestion of fat. It is well known that fatty substances, when given in sufficiently large quantity, are passed unaltered or imperfectly digested even in healthy persons; and hence the emancipation of the fatty evacuations of M. Bernard's dogs may have indicated only an impairment and not a suspension of the digestion. This is still further rendered probable by the curious experiments of Brunner, published in 1709; in which a large part, if not the whole, of the pancreas was excised or destroyed in the dog, the health and activity being maintained, and the functions regularly performed for a considerable time afterwards, to an extent which is scarcely consistent with the idea that the digestion of the fat was wholly or nearly suspended. We feel, therefore, that the solution of the question, as regards the pancreas, must depend on new experiments, after the manner of those above mentioned, and performed with strict regard to quantitative results: the animals should be weighed before and for some time after the operation, and its immediate effects; they should be kept alive as long as possible, and careful researches should be instituted into all the secretions and excretions. In the mean time, it is probable that the removal or destruction of the entire pancreas will be found—not,

indeed, altogether to suspend the digestion of fat, but—to impair it so much as to be inconsistent with prolonged life; although it appears that a very small remaining portion of the organ is sufficient to enable an animal to live for at least several months.

[M. Moyse refers to a case in the Boston Museum which is of considerable interest.]

"The patient was a labouring man, forty years of age. Thirteen years before death he was greatly reduced by hemorrhages from the bowels, and to this he always referred as the origin of his disease. Three years before death, he had a second attack, which was quite severe, and lasted several weeks. There was great tenderness in the epigastrium, with frequent returns of diarrhœa and discharges of blood, the functions of the stomach being, meanwhile, sufficiently well performed. In December, 1836, he was attacked with febrile symptoms, pain and obstinate constipation, followed by severe diarrhœa: *the discharges contained no bile,* but consisted in a great measure of blood, and the epigastric tenderness was extreme. In about a fortnight *a fatty substance was first noticed,* and from this time it was observed, more or less, in every discharge from the bowels, until the month of May, when it entirely ceased. The following report was made during the first attack: —'Patient declares that for six weeks he must have discharged, on an average, half a pound of this substance daily; *is also positive that he had no discharges of fat, except after eating meat or food cooked in fatty matters; that they would cease in twenty-four hours after abstaining from meat, and return again after resuming it; his wife, however, is confident there is no such connexion.*'"

"After this there was a partial recovery: the appetite at first good, often craving, afterwards indifferent; the alvine evacuations uniformly deficient in bile after December; complete jaundice for five weeks before death, which took place on the 16th of September, a tumour having been detected in the epigastrium in August, and signs of advanced phthisis being known to exist.

"On opening the cavity of the abdomen, a large fluctuating tumour, of a regular oval form, was seen below the right lobe of the liver; the duodenum ran over, and almost around it. On incision, it was found to contain about 14 ounces of a bloody-looking serous fluid, without coagula, not viscid or greenish, *and without any appearance of fatty matter.* The tumour or cyst measured four inches by three in extent; it was evidently formed by a dilatation of the pancreas; two calculi adhered to its inner surface, near the orifice of the duct, which was entirely obliterated; they had the usual characters of pancreatic concretions, and were found to consist of carbonate of lime. The remainder of the pancreas, forming the left extremity of the organ, was about two inches in length, much contracted, and feeling very hard; the duct itself was considerably enlarged, and opened freely into the cavity of the sac. On slitting open the common duct, a portion of it, which formed part of the parietes of the cyst was found in a very sloughy condition, it being evident that an opening was about to be formed, if it did not already exist, between the sac and the hepatic duct."

[Mr. Alfred Clarke, of Twickenham, in the *Lancet* for August 16th, 1851, relates a very remarkable case, and again in the Museum of St. Bartholomew's Hospital, there is a preparation illustrating a disease of the pancreas, likewise similar. We may conclude, therefore, that in cases of fatty alvine evacuation, the pancreas is probably the most important seat of the disorder. Several of the cases, however, would appear to show that the duodenum is not always necessarily involved, and that simple or malignant disease of the pancreas alone may be sufficient to account for the symptoms.]—*Brit. and For. Medico-Chir.-Review, July*, 1853. *p.* 154.

50.—ON AN ALVINE CONCRETION, CONSISTING OF CHOLESTERINE.

By Dr. William D. Moore.

[This concretion seemed to have been formed in the intestinal tube. The patient was a young lady. There had been obstinate constipation and colicky pains for some time; and it was at length voided per anum.]

She had never suffered from jaundice, pain, or other symptoms, whereby the passage of a gall-stone could be inferred. The calculus in size and shape resembled a pullet's egg; it weighed 210 grains, but was superficially lighter than water, as was proved by its floating when placed in avessel of that fluid. Its outer surface was tubercular, and exactly resembled that of a mulberry urinary calculus. Some shining scales were visible externally, and also throughout the mass when cut. On the application of heat it first fused, and then burned with a bright flame. It dissolved completely in boiling alcohol, and on cooling separated from its solution, as was seen under the microscope, in broad tubular crystals of cholesterine, which, with a small admixture of fæcal matter, composed the bulk of the concretion.

Many writers have supposed that because calculi found in the intestines, or voided *per anum*, have been proved to consist chiefly of cholesterine, they must necessarily have formed in the gall-bladder, and from that have passed either through the ducts, or by ulceration, into the intestine; and, in support of this view, it has been been argued that, where the parts are neither inflamed, nor in a state of spasm, the ductus choledochus may be considered to be in a passive state, admitting of an easy and gradual extension of its fibres, so as at length to allow of the free egress of the stone. ' It has also, indeed, been clearly proved by the example of a case in which a biliary calculus, in passing to the bowel, about a fortnight before being voided *per anum*, induced jaundice, yet gave no pain; that "the progress of gall-stones (even when inordinate in their dimension), through the ducts, is not disproved by the absence of pain from the epigastrium."

However admissible the foregoing facts may be, and conclusive as the case detailed by Dr. Wilson is, in establishing the proposition he advances, a little consideration will, I think, show, that the fact of a calculus consisting in whole or part of cholesterine, is not sufficient to prove it to be of biliary origin. For cholesterine is, according to Berzelius, "uni-

versally diffused through all parts of the body, and dissolved in its fluids." Simon states that it is a normal constituent of the bile, of the brain, and of the spinal cord. "It has been found," he adds, "in the blood; in the vernix caseosa; in the fluid of hydrocele; in an encysted tumour of the abdomen of a woman; in the ovary and testicle in a diseased state; in an abscess of the tooth; in a scirrhous structure in the mesocolon: in fungus medullaris; in medullary sarcoma; and in a vesical calculus extracted from a dog." Such being true, it is of course easily conceivable that a concretion composed of cholesterine might form, under predisposing circumstances, in some portion of the intestinal tube.

Dr. Douglas Maclagan was aware of the fallacy of inferring the origin of such calculi from their composition, for in his paper on the Constitution of Intestinal Concretions, published in the London and Edinburgh Monthly Journal of Medical Science for September, 1841, he observes, after describing a case in which vast numbers of small concretions had been passed, in reference to the question, as to whether these were a variety of gall-stone, that "the presence of cholesterine is no criterion. This substance is not only," he observes, "contained in the bile, and is thus poured into the intestinal canal, where it may easily be deposited; but it is frequently found in situations totally unconnected with the biliary organs." This statement is so very explicit, that I should not have thought it necessary here to enter upon the question, did I not find that many are still of the opinion that concretions of cholesterine must necessarily be derived from the hepatic system.

In conclusion, with respect to the patient, in reference to whose symptoms Sir Henry Marsh was consulted, it is clearly possible that the concretion voided by her may have been, not of hepatic, but of intestinal origin; and it appears to me that, if this be admitted, it will also be allowed to be more probable that a large calculus, such as I have described, should have formed in the intestine, than have passed in a young subject from the hepatic system to the bowel, either through the ducts or by ulceration, without giving rise to pain or jaundice.—*Dublin Quarterly Journal, August,* 1853, *p.* 247.

51.—OBSERVATIONS ON A CASE OF FÆCAL OBSTRUCTION.

By Dr. Robert Christison.

[Dr. Christison remarks upon the frequency of habitual constipation amongst the better classes of society. Instances in which the bowels are only relieved once a week are comparatively common, and he records two cases of patients, aged 60 and 70, who stated that they had never had their bowels moved more than once a fortnight during their whole lives. In the case about to be related the patient had not had a stool for three weeks.].

On admission he had no appearance of any suffering. He seemed a fresh, vigorous, active, cheerful man. He took his food tolerably well; the pulse was natural; and the tongue was only a little furred. "The

abdomen," to quote the Hospital journal, "is much distended, especially in the iliac regions, where there are two large prominent swellings projecting laterally, so that the crest of the ilium on each side is quite sunk, the tumours projecting much beyond the bones. There are different irregular swellings at different parts of the abdomen, especially in the track of the colon. Over some of these points percussion is quite dull; over others it is tympanitic. The circumference of the abdomen, where largest, is 39½ inches."

As it was judged unsafe to give him active purgatives by the mouth at once, in case of the great gut being firmly obstructed with hardened fæces, a turpentine injection was properly administered by the clinical clerk in charge of him. The result was "a prodigious discharge of fæcal matter of all degrees of consistence," much of it composed of very hard scybala. A dose of jalap and calomel given immediately after this forerunner, brought away also a great mass of fæculent matter. Next day, being quite well, but with the abdomen as large as ever, another similar dose occasioned only an ordinary discharge. On the third day, the swelling being equally great, though now quite uniform, and everywhere clear on percussion, I gave him what has always appeared to me the most effectual of all safe energetic purgatives in cases of simple fæcal accumulation—two drachms of oil of turpentine with six drachms of castor oil in the form of emulsion. But he had only two scanty loose discharges, and the belly continued in the same state, presenting especially the singular enlargement and overlapping of the iliac regions.

It was now apparent that, owing to long continuous distension of the bowels with fæces and gases, their muscular coat had lost its tone, in some regions at least, and especially in the cœcum and descending colon. It was then proposed by the clinical clerk to resort to galvanism for relief from this paralytic condition; which suggestion was at once adopted. It is more than twenty-five years since galvanism was recommended as a useful remedy in cases of obstinate constipation; and we can easily see that it may be useful, and upon what principle it acts. The first way of using it was by directing the galvanic current from the mouth to the arms; and in that way it seems to have been most effectual and prompt in some cases. But its action is thus rather painful; and ulterior observation has shown that passing the current in various directions through the abdomen itself may be sufficient. This remedy seemed even more applicable to the state of our patient after the bowels had been cleared out. And accordingly it acted with wonderful energy and success. After the current had been passed for some time from before backwards, as well as from side to side, he had, in an hour, a copious evacuation, in three hours another, and next morning a third. Flatus was also discharged in abundance; and the abdomen fell greatly, but still not completely, above all in the iliac regions. The pain of the galvanic action, however, had been so great that the patient begged to have a day's respite. In fact, he declared his willingness, and confirmed it with an oath, that he would rather be shot again than submit to be galvanised a second time. On the second morning, however, the remedy was applied more gently, and on two mornings subsequently. He had a daily discharge from his bowels, and sometimes two. The abdomen

had now become natural in size and form. Since then he has had a natural evacuation every morning, without aid from either laxative or galvanism. He was dismissed after being fourteen days in hospital.

This is a case a little out of the common run, but not without instruction; and I have therefore thought it well to bring the chief circumstances under your notice. It is an excellent illustration of the influence exerted by galvanism over the animal functions. It appears to me to hold out a probability that the same remedy may prove serviceable in restoring the tone of the intestinal muscles, in other forms of inconvenient chronic flatulent distension of the abdomen.—*Monthly Journal of Medical Science, Sep.* 1853, *p.* 252.

52.—CASES OF COLIC.

By Dr. Robert B. Todd, F.R.S., &c.

[The following excellent remarks upon the treatment of various kinds of colic, are from a clinical lecture upon the subject, delivered in King's College Hospital:]

Whether the case be one of simple colic, or gouty colic, or colic resulting from lead poisoning, you must endeavour to get the bowels to act freely. What you want is, to create a free channel through the intestine; and this you may effect by purging, and by the administration of enemata. The general plan of treatment which I commonly pursue with most cases of this kind in the hospital, is very much that which was suggested, some years ago, by Dr. Wilson, of the Middlesex Hospital. We commence by putting the patient in a warm bath, and, while he is there, a warm-water enema is administered; when the first enema is returned, a second quantity of warm water is forced up, so as to distend the colon; this is done several times in succession. Frequently a cure is effected by these means without any further treatment: but it is often necessary, in order to empty the bowels fully, to give a purgative. And that which answers best in these cases, is a combination of compound extract of colocynth and croton oil. A drachm of the former, and from one to three drops of the latter, are divided into twelve pills, and one pill is given every three hours until the bowels act. The stomach bears these small and frequently-repeated doses of the oil better than a full dose administered at once, and the operation of the medicine is more effectual. With respect to antiphlogistics,—the abstraction of a little blood sometimes does good in colic; but, as a general rule, you will find that bleeding only prolongs the convalescence of your patient. Leeches, also, are occasionally beneficial, in cases where there is abdominal tenderness; but the majority will not require them. You will find great benefit from the careful use of opium, in the more obstinate and complicated cases. You may give it simply to relieve pain, when that is excessive; or where there is great exhaustion, and the patient needs repose, you may give it freely to produce sleep; and, in administering it with this view, you will not find that your ultimate object will be retarded. On the contrary, the exhibition of opium often gives tone and power to the muscular coat of the bowel, and promotes the favourable action of purga-

tives. Moreover, opium is a valuable preservative against abdominal inflammations. Where you keep up a certain opiate influence, your patient will be less liable to peritonitis, or to enteritis. Opium also regulates and moderates the action of purgatives; and this is worth your always keeping in mind, for, in the use of purgatives, in cases of intestinal obstruction, it is often true, "the more haste, the worse speed."—*Med. Times and Gazette, July* 23, 1853, *p.* 82.

53.—ON THE TREATMENT OF TAPE-WORM BY THE MALE-SHIELD-FERN.

By Dr. Robert Christison.

[Dr. Christison has received many communications as to the result of the oleo-resinous extract of the above plant in the treatment of tape-worm. He says:]

In every case without exception the worm was discharged after a single dose, and usually in one mass. In some it was brought away without any laxative, and occasionally in that case with very little feculent discharge accompanying it. For the most part there was no pain or other uneasiness, either before or during its action. This was the case even in an instance in which the tendency to the disease had existed for no less than seventeen years, and in which the worm evacuated was the largest and strongest I have ever seen. Several patients, who had often previously used other anthelmintics, have noticed this absence of uneasiness during the action of the male-shield-fern, as something different from what they had experienced invariably before. It must be allowed, however, that several other individuals have complained of griping, sickness, or indescribable discomfort in the abdomen, and sometimes even of vomiting. But it admits of question, whether these occurrences depend on any direct action of the remedy on the human body, or upon the disturbed condition of the worm under the poisonous operation of the remedy on it. In fact, we have yet to learn that the male-shield-fern exerts any action on the human stomach or intestines, in the course of its deadly action on the parasitical inhabitants of them.

In only two cases have I heard of the disease having reappeared; and in both, the interval has been about six months. Of course there may have been others which I have not heard of. When the worm does not show itself in the discharges for some months after the effective operation of the remedy, I think it is more consistent with reason to say that the disease had returned, than to hold with some that the cure was imperfect, that ova was left to reproduce the worm, or that the head had remained to sprout again and renew the multitudinous joints behind it. Nevertheless, I have latterly advised the subjects of tænia to repeat the dose of the extract once a month for a little, until joints shall have ceased for some time to appear. In none of these cases have any joints been subsequently seen in this way. But it is a very simple precaution to take occasionally a remedy so little disagreeable. A patient, as to whom I was consulted by Dr. Graham of Cupar, had been liable to a return

of the disease every few months for nearly twenty years, during most of which time he was in the army, and got oil of turpentine, with partial success, from the successive medical officers of the regiments in which he served. In this instance, I have recommended an occasional dose of male-shield-fern as a security. The first dose brought away a very large worm without occasioning any inconvenience; and no joints had appeared in the discharges eight months afterwards.

At first I gave eighteen grains for a dose. But afterwards, and, I admit, without any reason except a desire for greater certainty, I have advised an increased dose of twenty-four grains. On the whole there has been less complaint made of uneasiness during the operation of the remedy since the larger dose has been used,—possibly because the worm is killed more speedily, and that the drug has no inconvenient action of its own upon the human alimentary canal, although given even in the larger quantity.

It was stated above that the ætherial extract of male-shield-fern had not failed in a single instance to bring away the worm with the first dose. In one case, which occurred in this city, it did seem to fail. But on repetition of the trial, with an extract prepared under my own instructions and superintendence, the effect was complete and speedy, as in all the other cases. On proceeding to inquire into the circumstances of the previous trial, I found that the extract had been obtained from a druggist, of unquestionable skill, who had made it for the first time; and it appeared that his preparation was of firmer consistence and more resinous-like than what I had been accustomed to use and recommend as made by another druggist in Edinburgh; and its taste was decidedly different. This imperfect extract proved to have been prepared from powdered root obtained from London; so that it was reasonable to conclude that the wrong root had been collected, or that it had been incorrectly dried. I believe that every druggist in good business in Edinburgh can now supply the genuine article.

As no experiments have yet been tried with other ferns, the selection of the proper species, *Lastræa Filix-mas,* must be considered for the present an important condition of success. Several other ferns, one common, others not so, may be readily mistaken for the true one by an uninstructed, or careless, or unconscientious collector. It is itself luckily very common. Except the *Pteris aquilina,* no other fern is so familiarly seen, in every dell of Scotland at least. The only other common one, and which indeed often grows in immediate proximity, the *Athyrium Filix-Femina,* is known by the frond; which, whether luxuriant in summer, or withered in winter, is easily recognised to be doubly-pinnate, and not, as in the true plant, singly-pinnate.

Peschier says the plant is efficacious chiefly between May and September, inclusive. We may trust so good an observer for the fact, that the root is efficacious in that interval. But it so happens that all my own specimens of the oleo-resin were made with fresh roots collected in February, two months at least before the young fronds begin in Scotland to peep above ground; and the preparation, which has been got in the shops of Edinburgh for almost all the cases reported to me, was prepared about the same time by one druggist. Hence I suppose the root is quite

efficacious enough at any season, if it be used fresh. I know nothing of the effect of keeping the root long. Peschier thought the oleo-resin began to lose activity in a year. I have known it used of that age with complete success.

I might easily illustrate these statements, according to the rule of the day, by a long list of cases, with uniform details, tiresome by their reiteration. But they all come to the same thing as the last which was communicated to me the other day by a late pupil, Dr. J. C. Davies, of Holywell, Flintshire, in the following terms:—"According to your advice, I sent to Edinburgh for the male-shield-fern, and have administered it in two cases as directed by you, with the most satisfactory results."

In conclusion, my experience of the male-shield-fern corresponds precisely with the much more extended observation of Peschier, at Geneva, more than a quarter of a century ago. I am persuaded, therefore, that it is easy, with a few simple precautions, to obtain from a common indigenous plant a more efficacious and less disagreeable anthelmintic for the expulsion of tænia, than from either the Abyssinian kousso, the Continental pomegranate, or American turpentine. It is surprising that Peschier's observations, made on a very large scale indeed, have attracted so little attention in Britain until the late notice in the Edinburgh Monthly Journal. I can only say this has not been for want of a strong recommendation on my own part, both in my Lectures constantly since 1833, and also in my 'Dispensatory,' when first published in 1842.—*Monthly Journal of Med. Science, July,* 1853, *p.* 47.

54.—ON THE PRODUCTION OF THE FATTY CONDITION OF THE LIVER.

By Dr. C. Handfield Jones, F.R.S., &c.

[Although a great deal has recently been written upon the subject of fatty liver, yet, we may still ask the question—What really constitutes true fatty degeneration of this organ ?]

Is it to be regarded as a simple increase of the quantity of oil naturally existing in the hepatic cells, or is it a further and more important change ? I am much inclined to think that the latter is the case, and that a real distinction exists between the condition of oily accumulation when there is simply an undue quantity of oil present in the parenchyma, and that of true fatty degeneration when the natural structure is more or less altered and destroyed. To illustrate this I will quote first the instance of a kitten, which had been fed for about a week on food containing much oily matter. The liver was of a dull grayish-yellow tint, in the first stage of hepatic venous congestion. Sections viewed under the microscope were utterly opaque, and showed both the cells and intercellular substance loaded with oily molecules; the accumulation of oil was equal everywhere. The ultimate ducts were dissected out and found natural. Here all that had occurred was the addition of a quantity of

oil to the hepatic parenchyma (not to the ducts), there was *no degeneration* of the cells. In contrast to this instance I will place the notes I made of the condition of two livers taken from the bodies of two persons who died in St. George's Hospital. In one "the liver was in a complete state of fatty degeneration; the oil drops, however, did not seem to be enclosed in distinct cells, but to lie in an indistinct granular or semi-fibrous stratum; scarce any distinct cells were to be seen." In the second, the liver being also in a state of complete fatty degeneration, I observed that the cells were, for the most part, destroyed, and that only films of granular matter remained; the number of free nuclei also seemed to be fewer than usual. In these two cases it was quite evident that the natural cell structure of the liver was, to a great extent, destroyed, that a real degeneration had taken place; and this I have repeatedly observed in most cases of fatty degeneration of the liver, occurring in persons who have died of various diseases. Whether a liver, whose cells are thus destroyed, can recover its natural condition, is a question of much interest, but one which it seems impossible to answer.

A circumstance of much interest, which seems still further to indicate the degenerative character of the fatty transformation of the human liver, is that in such livers, I have almost invariably been unable to detect the existence of sugar, and this is confirmed also by the experience of my friend Mr. Blyth. This, however, was not the case with the kitten's liver, who had been fed on fatty food,—it yielded on analysis a full proportion of saccharine matter.

Another point which has not been much noticed is the peculiar limitation of fatty degeneration to the margins of the lobules, which is very frequent. I think the change does not consist merely in accumulation of oil in the marginal cells, but that destruction of them actually takes place. A liver affected in this way, presents the lobules most perfectly marked out by a zone of opaque matter, this varies in different cases somewhat in width, but may be said generally to occupy about one fifth or one fourth of the distance from the margin to the centre. I can give no sufficient explanation of the tendency of oil to accumulate in the marginal cells; it may, perhaps, in part depend on the circumstance that the stream of portal blood first passes through them; but this does not at all account for the converse occurrence, viz, oily accumulation in the central cells, which is sometimes very marked in the healthy livers of animals. There is commonly but little yellow matter in the cells of livers deeply affected with fatty degeneration,—sometimes, however, it is sufficiently apparent in a few here and there; the common condition of livers which present more or less of the "nutmeg" aspect, is oily accumulation or fatty degeneration of the margins, with heaping up of yellow molecules in the central cells around the intra-lobular vein.

Fatty degeneration of the liver, when complete, may occur in very different diseases; it is by no means peculiar to phthisis, as is well ascertained. Out of nineteen cases which I examined microscopically, four or five only had any connection with phthisis; the others occurred in diseases of various kinds, which, for the most part, but not invariably, had produced great emaciation.

Another kind of degenerative change is present in the much more rare

lardaceous liver. One specimen of this kind which I examined, had the following characters: it was enlarged, bulky, of solid feel and glossy aspect, having a yellowish tint with some whitish spots, and containing very little blood. Thin sections under the microscope showed some of the lobules in a pretty natural state, the cells perhaps rather enlarged, and arranged very much in a linear manner. In other lobules there was a manifest infiltration between the cells, of an homogeneous, highly refracting substance, much resembling concrete oily matter; this was very abundant in some parts, so much so as to compress the cells and reduce them to mere bands anastomosing together, and producing the appearance of a plexus containing the homogeneous matter in its meshes. In many spots, especially in the vicinity of the deposited substance, the cells were deeply tinged with yellow matter. The refracting matter in another instance consisted of spherical, oval, or irregular shaped masses, which had somewhat the size and figure of the natural cells, but did not, I think, result from a transformation of these. Liquor potassæ added to thin sections under the microscope reduced the deposited matter to mere filmy fragments, and diminished considerably the refracting power; its action upon this substance and the surrounding cells, many of which contained much oil, was very different; the latter becoming more transparent exhibited their oily contents with great distinctness; the former, though quite translucent, showed no trace of oily matter. The minute ducts in the latter specimen, as well as in the former, were of natural appearance. I have several times examined spleens from the human subject, which contained a great quantity of matter precisely similar in appearance to that which was here deposited; its seat in the spleen appears to be chiefly the Malpighian bodies whose natural cell structure it replaces, and then extending outwards, brings about an atrophy of the red pulp, which occurs to such an extent that at last mere red streaks are seen separating the translucent glistening substance, and the natural deep colour of the organ is lost. The term by which Rokitansky designates this peculiar deposit, is the "lardaceous" (speckig), and the pathological relations he assigns to it is with "constitutional disease of the vegetative system, especially with scrofulous and rickety disease, with syphilitic and mercurial cachexia," and occasionally as a sequel of intermittent fever. Dr. Budd recognises this condition as a scrofulous enlargement of the liver; this I think is so far correct, as intimating its relation to scrofulous disease, but it ought clearly to be understood that the deposit is totally different from tubercle, and is, indeed, so far as I know, *sui generis*.

The minute ducts in the fatty and last-described condition of liver have appeared to me pretty natural; this fact renders it more easy to understand how, with so considerable alteration of the parenchyma, bile can still be secreted.

Rokitansky, describing cirrhosis, says—"We are not of opinion that granular liver always takes its origin in the same fundamental affection; we are inclined to adopt two morbid states as the essential and original anomalies which give rise to granulations in the hepatic parenchyma as a secondary affection. In one case there is a morbid development of the capillary gall ducts, (the so-called secreting tissue,) an accumulation of

the secretion, and probably also an hypertrophy of the parietes of those vessels giving rise to the nutmeg liver and to an obliteration of the capillary blood-vessels, the so-called vascular substance." . . . . . "In the second case, the original affection of the hepatic parenchyma in granular liver is proved, by the post-mortem appearance of the granulations, to consist in a slow chronic inflammation. This induces a gradual obliteration of the parts attacked, and their conversion into fibro-cellular tissue, the amount of which varies in proportion as the processes of absorption or organisation predominate in the inflammatory product. This secondary metamorphosis, from not occurring uniformly, results in a subdivision of the organ into larger and smaller scattered compartments, which present the characteristic rounded form of the granulations in the same ratio as they correspond to single hepatic lobules."

Dr. Budd, in his chapter on Cirrhosis, describes it as "the consequence of adhesive inflammation in the areolar tissue about the small twigs of the portal vein, by which serum and coagulable lymph are poured out. The serous part of the effusion gets absorbed, and the fibrine contracts and becomes converted into dense fibrous tissue, which divides the lobular substance of the liver into well-defined masses," &c.

I cannot say that I have observed any condition corresponding to the first form of cirrhosis which Rokitansky describes. A morbid development of the capillary gall ducts must mean a morbid enlargement of the hepatic cells of the lobules, and such I have never seen in this disease. Dr. Budd's description expresses the opinion ordinarily received, to which I have but little to add that can be esteemed new. I think, however, that a somewhat different view may be taken of the nature of the morbid change constituting cirrhosis, and that some of its different forms may be more exactly traced.

In some cases, no doubt, the fibrous tissue of the Glissonian sheath is affected with what may be truly called adhesive inflammation, attended with the effusion of coagulable lymph and serum. These cases will be marked by tolerably distinct symptoms—pain in the side, vomiting, fever, perhaps jaundice, as Dr. Budd enumerates them. The portal canals are the seat of the inflammation,—chiefly, I believe, the larger, and not to any great degree the smaller, canals or the fissures. In other instances, which I believe are more numerous, the same parts may be affected, but the nature of the change is different. The fibrous tissue of the sheaths undergoes thickening and condensation, but not as a consequence of effusion of lymph and serum in an acute attack; the process is much more of the nature of degeneration, more akin to the chronic thickenings which are so often observed in fibro-serous membranes, and which are often coincident with this condition of the liver. The result of the above changes, when they do not extend to the smallest portal canals and interlobular fissures, is, I believe, the common hob-nail condition of the liver. If the thickening and condensation proceed further, and affect the sheaths which surround and invest the lobules, then the condition is different, and corresponds very nearly with that which I described in a communication to the Pathological Society, three years

ago, under the name of "nutmeg liver." This description I subjoin, but would remark, at the same time, that in several of these cases I have no doubt that there takes place also a deposition of unhealthy plasmatic fluid in the substance of the lobules, which solidifies them, and tends to increase still further the atrophy of the cells which the defective supply of blood induces. It is difficult, in examining the *débris* of the parts thus degenerated, to distinguish accurately, in all particulars, between what should be regarded as cause, and what as effect; but, though aware of this, I still am strongly inclined to believe that such a process as I have indicated does actually affect the lobules themselves, and that the unhealthy nutritive process, which is the essence of cirrhosis, may manifest itself chiefly in either of three situations:—1. In the larger and middling-sized portal canals, excluding only the smallest. 2. In these last, and in the fissures. 3. In the smaller canals and fissures, and in the substance of the lobules. The first form results, as said, in the common hobnail liver; the second and third produce tough, firm, dense livers, which are sometimes termed "brawny."

If, indeed, the view should prove correct which is entertained by some eminent pathologists, that fibrine is an excrementitious or effete substance—not, as was formerly supposed, one of the highest importance to the renewal and growth of tissues—then the existence of such a diathesis and morbid state as I have just alluded to would become in a still higher degree probable. We should then recognise the fibrinous as a form of excrementitious plethora, in which a fluid material, characterised by a tendency to spontaneous coagulation, and existing in the blood probably in undue quantity, produced injurious effects, by slowly perverting the nutrition and spoiling the texture of various parts: we should perceive a connection between various phenomena which now appear isolated. The deposition of vegetations, so called, on the valves of the heart, or the deposit of fibrinous masses in the spleen or elsewhere, would then appear as instances of tumultuous and excessive formation of fibrine in the blood, which was thus cast out hurriedly in these parts. The presence of fibrinous nodules beneath the capsule of the liver, or on the pulmonary pleura, would indicate a process of a similar but much more gradual nature. All the various thickenings of fibrous or fibro-serous membranes, stiffening of the valves of the heart, contraction of its orifices, shortening of its cordæ tendineæ, many of the common pleural adhesions, white pericardial patches, would be properly ranked as having their origin in a similar morbid condition of the blood. They would appear then as manifestations of a general state, and not as local affections. The common fibrous tumour of the uterus would be a particular localisation of the general diathesis. There would appear reason to consider the large, firm, dense kidney, with its adherent capsule, as another result of such morbid action. The adhesion of the capsule to the surface is evidently the result of a similar change to that which thickens the capsule of the liver, and the increased bulk and coarser condition of the epithelium of the tubes may not improbably be attributed to its having undergone a kindred change, modified, of course, by its own peculiar nature. I cannot help remarking that no term seems to me, in many cases, so exactly to describe the condition of the renal

epithelium in this condition of the organ as the word *stiff*; comparing the morbid structure with the healthy, it gives one the idea of being as much incapacitated from undergoing its normal chemico-vital changes as a stiff and rigid aortic valve is from following its natural easy movement. Again, under the head of fibrinous disease, we should range various forms of so-called chronic pneumonia, in which, with little appearance of acute inflammation, there has taken place exudation into the cavities of the air-cells, and complete condensation of the tissue. Some of these cases, by the nature of the exuded material, would form a connecting link between chronic pneumonia (the fibrinous) and the recognised tubercular infiltration. The above are all instances of extra-vascular change produced by the fibrinous disease; one, however, we may refer to as originating in the interior of the vessels, and occasioning, by its arrest of the circulation, irremediable gangrene of the parts thus deprived of their supply of blood. I allude to the spontaneous coagulation of the blood within the vessels, of which several instances have lately been recorded, and which can be ascribed with no kind of probability to any other cause than such a state of the blood as we are now considering.

The preceding is rather a long discussion, but may be excused, I trust, from its intimate connection with the pathology of cirrhosis.

The form of cirrhosis which produces the "brawny" liver often coexists with dilatation and hypertrophy of the heart, the former predominating more or less. The retardation of the circulation thus occasioned throws the blood back upon the large veins; and the hepatic veins in particular, with their radicles in the centre of the lobules, are in consequence much congested. I am strongly inclined to think that this congestion of the central part of the lobules has much to do with the peculiar alteration of the cells which there takes place, and which is almost exactly co-terminous with the congestion. The bile pigment is in all probability derived from the colouring matter of the blood, and it is worth noticing that this yellow matter is especially connected in those parts which are especially the seat of sanguine congestion. Hepatic venous congestion of the first degree is far the most common, and it is in the same part which this occupies, viz., in the centre of the lobules, that we find almost invariably yellow matter present in the cells.

Cirrhosis is sometimes combined with fatty transformation; a section then presents opaque inlets, the lobules gorged with fatty matter separated by wide, more transparent spaces, which are the enlarged fissures and spaces occupied by new formed fibroid tissue.

The ultimate ducts in cirrhosis are of course involved in the dense fibroid tissue, and are more or less atrophied by its pressure; their nuclei appear stunted and starved, and the structure is sometimes altogether lost, at least the ducts can no longer be discovered. Usually, however, by the aid of acetic acid they can be seen pretty readily in the widened fissures and canals.

Jaundice manifestly results from the conveyance into the blood of biliary pigment, that constituent of the bile which is certainly excrementitious and intended to be cast out with the fæcal matter. In most cases there is retention of the yellow matter in the liver, from a mechanical obstacle to its flow into the intestine, or from inaction of the

excretory ducts; the retained matter, which, however, is not in excess, being absorbed into the blood instead of passing out with the secretion. In other cases it seems to be formed in excessive and unnatural quantity, as in the acute yellow atrophy of the liver, and perhaps in diseases of the heart, producing great congestion of the veins. It is extremely common to find yellow matter in the cells of the central parts of the lobules in cases of different description quite unattended with any jaundice; this is so frequently the case that it really seems probable that it results from the congestion of the intra-lobular veins and surrounding capillaries which takes place during the last hours of life. Great dilatation of the cavities of the heart, with consequent retardation of the circulation, produces most remarkable yellow engorgement of the central cells of the lobules, and this condition is, I think, not unfrequently accompanied with marked jaundice. In this case, however, I believe there is no cessation of the flow of bile into the intestine; the function of the ultimate ducts and of the exterior cells is still performed; and there seems only to be increased production of yellow pigment in the central cells. It must be borne in mind that this yellow pigment as it exists in the cells does not evidence the presence of biliary matter, of cholic acid, or its conjugates. The yellow matter can be extracted by alcohol, and gives the characteristic re-action of bile-pigment with nitric acid; but Pettenkoffer's test decides against the presence of the organic biliary acid. The deep colour of the urine in jaundice also seems to depend solely on the presence of the pigment; no trace of cholic acid is often discoverable. I conclude, therefore, that in most cases jaundice results from the absorption into the blood not of completely formed bile, but of one of its constituents only, viz., the yellow pigment. This takes place, (1) when a mechanical obstacle prevents the flow of bile into the intestine through the duct. com. choled.; the bile then accumulates in the larger ducts and distends them: it continues to be secreted for some time, but afterwards, accumulation of yellow matter takes place in the cells, from which it is no longer freely extracted by the elaborating ducts; (2,) when inaction of the elaborating ducts occurs. This is the commonest case; the cells become filled with yellow matter, as before, because it is not withdrawn from them; (3,) when, with or without impairment of the action of the excretory ducts, an increased quantity of yellow pigment is formed in the parenchyma of the liver.

I may quote here some remarks from Prof. Lehmann's work on Physiological Chemistry, which seem to me not only to bear out the opinion he adopts, that the components of the bile are not formed in the blood, but also to support the view I have maintained, that the bile is not completely formed in and by the hepatic cells, but that this is effected by the action of the ultimate ducts. Lehmann says "It is just in disease of the parenchyma of the liver that jaundice very seldom occurs; in fatty liver, bacony liver, and the rare tuberculosis of the liver, certainly never; even in granular liver and inflammation of its substance but seldom. Jaundice only presents itself constantly in diseases of the gall passages, and in acute yellow atrophy."

Now, if with these various alterations of the parenchyma of the liver bile can still be formed, as we know it often is, it seems highly probable

that some other apparatus besides the cells has a large share in the formation of this secretion, or at least is capable of taking such.—*Medico-Chirurgical Transactions,* 1852, *p.* 259.

55.—*On the Effects of Cholagogue Medicines, and some Remarks on the Morbid Changes in the Liver.* By Dr. C. Handfield Jones, F.R.S. [After alluding to some of the remarkable peculiarities with regard to the structure of the liver, Dr. Jones proceeds to relate a large number of experiments, illustrating the action of this class of remedies upon various animals, and the general result is briefly as follows:—]

Mercury, muriate of manganese, and colchicum, are the only ones which seem to increase the production of yellow matter in the cells of the liver. I have placed them in the order of their potency. That they also increase the production of glycocholate and taurocholate of soda I think very probable; but unless we were assured that the quantity of these principles is always proportionate to that of the yellow pigment, which does not seem to be the case, the above experiments say nothing as to this point. It is clear that the cholagogue action of a medicine, its emulging effect on the ducts, is distinct from that which it exerts in the *production* of biliary pigment. Jaundice has been known to come on during a mercurial course, and apparently an effect of the medicine. I have at present a patient under my observation (one of Dr. Chambers in St. Mary's Hospital), who reports her jaundice to have appeared after taking a six grain calomel pill. These statements are in accordance with the experiments I have detailed,—the animals to whom I gave mercury had jaundice of the liver.

One very important effect to be noticed of the administration of mercury on the liver is, that it certainly produces very great congestion of the organ; this is an argument for rather forbearing the use of this remedy in inflammation of the substance of the liver, a practice which would otherwise be recommended by our analogical experience.—*Med.-Chirurgical Transactions,* 1852, *p.* 258.

56.—*On the Treatment of Dysentery.* By Dr. Cameron, Surgeon 37th Regiment.—Dysentery is generally seen as colonitis in Ceylon, and very rarely attended with that hepatic complication so much talked of elsewhere. The treatment pursued has been local depletion by leeches to the abdomen and anus, the internal use of Dover's powder and ipecacuanha, in doses of three grains each every third hour during the early stage, and afterwards combinations of opium with kino, chalk, tannin, acetate of lead, &c., according to circumstances.

In all severe cases, I have for many years past conjoined quinine in moderate doses with the other remedies, giving to the extent of twelve or sixteen grains in the twenty-four hours, and, I am persuaded, with the best results as regards the patient's strength and the prevention of

sloughing of the mucous membrane. I attach much importance, also, to the support of the patient from the commencement. Sick men often die of *starvation* as much as anything else. I generally give a cup of arrow-root twice a-day for the first three days, and after that continue it, with chicken broth, for dinner and drink. Opiate injections are commonly used. I have occasionally derived benefit from strong solutions of nitrate of silver thrown into the colon; but with the ordinary apparatus it is nearly impossible to use the remedy effectively, owing to decomposition.—*Med. Times and Gazette, Oct.* 8, 1853, *p.* 366.

DISEASES OF THE URINARY ORGANS.

57.—ON DISEASES OF THE KIDNEY.

By Dr. George Johnson.

[Dr. Johnson correctly remarks, how very frequently acute renal diseases, with dropsy and albuminous urine, are preceded by chills upon the surface, produced often by working or standing in wet clothes. The same in cases occurring after scarlatina: hence it is, that the chief means of preventing consequences ensuing after scarlet fever, are protection from cold until the period of desquamation has passed by.]

A consideration of the circumstances under which these attacks of acute renal disease occur, and of the appearances observable in the urine and in the kidneys, warrants the inference, that the renal changes are the result of an effort to eliminate some abnormal products, which have been conveyed to the kidneys by the blood. In cases of scarlatina, for instance, it is probable that exposure to cold has the effect of checking the process by which the fever-poison, or ferment, or the product of fermentation, is eliminated from the skin, and that the morbid materials are then transferred to the kidney, in accordance with the well-known tendency to vicarious action of the skin and kidneys. An instructive illustration of this principle is afforded by the fact of several medicines, such as, for instance, the acetate or citrate of ammonia, acting either as diaphoretics or diuretics, according as the tendency is imparted to them by the skin being kept warm, or the contrary. These facts may assist our comprehension of what probably happens when a patient is exposed to cold too early after the onset of scarlatina. The work of elimination is then transferred from the skin to the kidney; and, as a result of this, there is, in some instances, a free desquamation of the renal epithelium, analogous, as it appears, to the cutaneous desquamation which follows the eruption of scarlatina. That the cells of renal epithelium which are thus freely shed do actually carry with them a portion of the abnormal material with which the blood is infected, is, I think, as nearly certain as any position which is chiefly based upon probable evidence can be. In the urine of a girl named Robinson, who died in King's College Hospital in the year 1847, there were numerous cells of renal epithelium completely filled with crystals of oxalate of lime, while other cells contained

oil; the urine was highly albuminous, and had in it many tube-casts. In this case, it is evident that the renal cells were conveying away abnormal products. The hypothesis which assumes, that the free shedding of epithelium from the uriniferous tubes is a means of eliminating morbid materials, is quite consistent with all the facts of the case, which cannot, I think, be said of any other explanation of the phenomena which has been suggested.

The process of renal desquamation, although primarily and essentially beneficial in its tendency, is not unproductive of mischief; for the secreting structures of the kidney being arranged in the form of minute tubes, which are of great length, and very tortuous, it is evident that the epithelial cells which are thrown off cannot escape with that rapidity with which the epidermic scales are cast off from the cutaneous surface; the consequence is, that the cells, and the fibrinous materials which accompany them, frequently fill, distend, and obstruct the tubes, and thus greatly impede, if they do not entirely arrest, the secretory process. And thus it happens, that many tubes being rendered inefficient, either for the further elimination of the morbid products, or for the discharge of their normal excretory functions, the urine is greatly diminished in quantity, and the patient may die from some of the secondary consequences of an accumulation of poisonous excrement in the blood.

To illustrate these phenomena by an analogy, I would remark, that the relief from urgent symptoms which is afforded by the appearance of the small-pox eruption, is evidence, as we suppose, that some mysterious poison has been thrown from the blood into the skin. The non-appearance of the eruption is often associated with the most rapidly-fatal symptoms; and, on the other hand, the patient may be killed by the very abundance of that eruptive process which nature intended, and which was, indeed, essential for his preservation.

In like manner, it is a matter of almost daily observation, that those cases of acute dropsy with albuminous urine are, in general, most certainly and easily cured, in which there is a copious renal desquamation; while the most rapidly-fatal case which I have met with, was one in which there was neither desquamation nor fibrinous effusion into the kidney-tubes.

It must be remembered, that, as the eruption of small-pox may be scanty, in consequence of the blood being infected, as we suppose, by only a small amount of the specific poison, or in consequence of the blood being changed by the same poison in a less degree than ordinary, so the degree of renal desquamation may be slight from an analogous cause. In both cases, we draw this conclusion from the observation of similar facts,—namely, the comparative mildness of the general symptoms. These doctrines are obviously, in a certain degree, hypothetical; but any one who rejects them merely because they are hypothetical, and not because they are inconsistent with established facts, can scarcely have reflected as he ought to do upon the fact, that it is upon probable and not upon demonstrative evidence that we are often bound to act,—if we will act at all,—not merely in the practice of medicine, but in the most important concerns of our daily life.

With regard to the duration of an acute renal attack, it is to be

observed, that very much depends on the nature of the cause. As an illustration of this, I may mention, that the renal disease which occurs in connexion with cholera, often terminates within two or three days from its commencement; while the duration of that which results from scarlatina is rarely less than the same number of weeks. Yet, in both instances, the local phenomena are precisely similar. The prognosis, therefore, is not to be based exclusively upon the condition of the urine.

In thus briefly passing in review the leading facts in the pathological history of that form of acute renal disease which is always associated with albuminous urine, and in most cases with dropsy, my purpose has been to indicate the primary object of treatment, which is, *to guard against exposure to cold.* As exposure to cold, whether acting alone, or in conjunction with other influences, is among the most frequent *exciting causes* of inflammation of the kidney, so there is nothing which has a greater tendency to perpetuate the disease, and to render it incurable. Attention to this point of treatment is as indispensable for the patient's welfare as a steady position for a broken bone, or rest for an inflamed knee-joint. I am confident that the neglect of this precaution has been the means of converting more acute and curable attacks of renal disease into a chronic and incurable malady than all other causes combined. Within the last few months several instances have come to my knowledge, in which the life of a patient suffering from acute renal dropsy has been sacrificed, by his being permitted to go out, day after day, to visit his medical attendant.

In a cold season, confinement to the bed is absolutely necessary for the patient's well-being and safety; and, even in warm weather, it appears to favour and hasten the recovery. Rest in the horizontal posture tends to quiet and equalize the circulation; and the uniform warm temperature of the bed favours the action of the skin, and prevents the risk of a check to the perspiration. The result is, that the dropsy quickly subsides, and the urine becomes more copious and less albuminous.

The diet should be scanty; for the patient has little desire for food, and the digestive powers are much impaired. The passage into the blood of imperfectly-digested food will surely irritate the kidneys; the urine is often more albuminous after meals, and I once saw a return of hæmaturia follow a meal of potatoes. Alcoholic drinks should be prohibited, unless required for some special purpose.

Having secured the two primary objects of treatment—a moderate uniform temperature, and a scanty diet—we must be guided by the nature and urgency of the symptoms in the choice of additional remedies. In every case it is desirable to promote the action of the skin and bowels; the first by diaphoretic medicines and the hot air bath, and the latter by saline aperients, or by the compound jalap powder. The free action of these great excretory surfaces is a very efficient means by which to lessen the injurious over-work of the kidneys. It scarcely need be said, that however scanty may be the urine, no stimulating diuretic is to be given; indeed, the more scanty the secretion, the more injurious would be the effect of any irritating drug. This is so obvious, from a consideration of the pathology of the disease, as to require not a

word of comment or explanation. During the convalescence the urine is usually twice as abundant as in health, in consequence, probably, of the naturally diuretic influence of the urea and other urinary products which, having accumulated in the blood during the acute stage of the disease, find a free outlet when that stage is passed. A practitioner who has been perseveringly giving diuretics, and who is ignorant of this pathological fact, will be likely to attribute to the influence of his drugs this abundant flow of urine, which is, in fact, only a natural and a spontaneous diuresis. It will be understood, that, in deprecating the use of diuretics, I am speaking only with reference to cases of *acute* renal disease. When the disease has become chronic, and when an excessive dropsical accumulation constitutes the most distressing and dangerous symptom which other means have failed to remove, "we must incur the risk of one possible and contingent evil for the chance of obtaining what, if obtained, is a certain and positive benefit; we must endeavour to remove the dropsical accumulation by means of diuretics, whether these accelerate the progress of the disease in the kidney or not." In such circumstances the hope of entirely removing the renal disease has been abandoned, and the chief object of treatment is to relieve the most urgent symptoms, and to prolong life to the utmost.

[After the acute stage of nephritis has passed, Dr. Johnson recommends that the patient, especially in winter, be kept in-doors, until no albumen can be detected in the urine. If he rebels, he will very probably bring on a relapse, of which he should be warned. If, after every precaution has been taken, and the period of confinement prolonged, still the urine contains albumen, though natural in other respects, gallic acid may be given; and if, after this the quantity of albumen continues, Dr. Johnson advises that he should be removed to the sea-side, and allowed to take a daily airing. If the malady still persists, and assumes a chronic form, the patient must be urged to take a sea voyage as early as possible. As to the treatment of cerebral symptoms, consequent on acute inflammation of the kidneys, as after scarlatina, or exposure to cold, we must relieve the congested state by cupping over the region of the kidneys, and abstracting a moderate quantity of blood, and by exciting free action in the mucous membrane of the bowels, by means of elaterium or pulv. jalap. co., with a few grains of calomel sometimes added.]

If we can excite copious discharges from the mucous membrane of the bowels, we shall, by that means, eliminate some of the excreta which are poisoning the blood, for urea has been detected in the watery stools produced by elaterium. There is not much to be hoped from cupping over the kidneys, but dry cupping can certainly do no harm; and, if the patient's appearance be not decidedly anæmic, we may venture to abstract a small quantity of blood; but we shall do this with much caution if we bear in mind Dr. Watson's suggestion,—sanctioned, too, by the high authority of Dr. Todd,—that an impoverished condition of the blood may favour the tendency to coma and the poisonous action of urea. Cold lotions may be applied to the head when the scalp is hot, and blisters when the skin is cool. Since, in any case, it is a more hopeful task to prevent drowsiness from passing into coma, than to bring a

patient out of a comatose condition when once he has fallen into it, it is important to keep a watchful eye upon the premonitory symptoms. In some cases, it appears that the most successful mode of keeping them in check is to give a nutritious but unstimulating diet, with moderate doses of steel, and, at the same time, to keep up a free action of the bowels.

[Can the kidney perfectly recover from an acute inflammatory attack? Dr. Johnson answers, yes, if the case has come early under treatment, and yielded to it in moderate time. No harm will result, except the spoiling of a few of the tubes, and wasting of the parts, unless the disease has been so long prolonged as to destroy the epithelial lining of the tubes, and render them liable to be converted into cysts.]—*Med. Times and Gazette, July* 16, 1853, *p.* 53.

58.—INFLAMMATION OF SEROUS MEMBRANES IN CHRONIC RENAL DISEASE.

By Drs. George Burrows and W. Senhouse Kirkes.

[Examinations after death prove the frequency of the complication of inflammatory affections of the serous membranes with chronic renal disease. Generally in such cases, one or more of these structures present evidence of having been formerly or recently inflamed.]

The liability of the serous membranes to become secondarily affected in the course of chronic disease of the kidney, was recognised and pointed out by the eminent physician to whom we are indebted for so much that we now know on the subject of renal disease. In the first volume of his Reports, Dr. Bright says: "When the secretion of these organs [the kidneys] is greatly deranged, the serous membranes seem always ready to become the seat of inflammatory action." And again, at page 18, he speaks of the "disposition which exists in this disease [renal dropsy] to severe inflammatory affection of different structures, but more particularly of the serous membranes"; and such secondary serous affections he elsewhere speaks of as among the chief sources of danger in chronic renal disease. The truth of these statements has been amply confirmed by later observers, and the liability of the serous membranes to become inflamed in the course of Bright's disease may therefore be regarded as a fact well established.

Although it may be considered as a settled truth, that the serous membranes, as also other tissues, are prone to inflammation in the course of Bright's disease of the kidney, yet there are certain peculiarities in the serous inflammation, which have either not yet attracted particular attention, or have not been sufficiently dwelt upon; and as these peculiarities seem calculated to throw some light on the cause of the inflammatory process, and so to be beneficial in treatment, an inquiry into them here may not be out of place. In the first place, then, it may be observed, that in every stage of chronic renal disease there seems to exist a tendency to the effusion of an excess of serum into the serous

cavities, as well as into the loose cellular tissue of the body. The effused fluid, in this disease, differs in its nature, as well as in the cause producing it, from that exuded in cardiac dropsy. In the latter, it results from mechanical distension of the capillaries; in the former, from an unhealthy state of the blood, especially of its serous parts. In cardiac dropsy, the exuded serum is usually clear, and of a colour varying from pale straw to deep yellow; in renal dropsy it is almost always slightly turbid or opaline, sometimes whey-like and milky, and usually of a pale tint, almost colourless. Moreover, the dropsical fluid in cardiac disease is free from urea; while that in renal disease has been found to contain urea in appreciable, often considerable quantities. Simon met with it in the fluid from dropsical legs in a case of Bright's disease; and Marchand found "an extraordinarily large amount in the fluid removed by tapping from a woman with ascites." Simon, therefore, is probably correct when, speaking of dropsical fluids in general, he says: "If the kidneys are affected, urea is generally present" in them. For, since it is well known that the blood, especially the serous part of it, is charged with urea in Bright's disease, it may be readily believed, that in transuding the walls of the bloodvessels, the serum of the blood carries with it some of the urea, as well as other materials which it holds in solution, and that this ingredient may be detected in the dropsical fluid accumulated in the serous cavities, or exuded into the cellular tissue of the body.

To the presence of this excrementitious material in the serum exuded from the blood may probably be ascribed the inflammation which is apt to ensue in the serous cavities in renal disease. Highly delicate and sensitive, as we know the serous membranes to be, we can scarcely be surprised that they should be irritated and excited to a kind of inflammatory process by the substitution of a fluid charged with urea, for the simple unstimulating secretion by which their interior is naturally moistened. And this is the more likely to be the case, since the fluid exuded into the serous cavities remains pent up therein, and cannot, as in the case of exudations from the mucous surfaces, be at once got rid of, and the liability to mischief from prolonged contact with the membrane be thus obviated. Wherever exuded, the serous fluid, impregnated with urea, will probably act as a local irritant to the part with which it comes in contact; but, from the mucous surface, it is swept away as fast as poured out; while, in the serous cavities, and the cellular tissue of the integuments, or of organs, it necessarily remains until re-absorbed, and may readily be supposed to induce the inflammation which the serous membranes, the cutaneous cellular tissue, and the substance of cellular organs such as the lungs, are apt to undergo.

The several peculiarities observed in the serous inflammations ensuing in the course of renal disease, may, probably, in great measure, have their explanation in the view here taken of the cause of these secondary inflammations. The inflammatory process, as it occurs in this disease, differs in several respects from that arising spontaneously, or excited by any other cause than renal disease. In its mode of onset it is usually insidious, commencing and progressing with scarcely any of the general or local signs of inflammation, no pain, and no fever, and, therefore,

often not discovered till after death, or detected during life by a mere accidental auscultation. It commences, too, very frequently, in one or more serous membranes simultaneously, and quite independent of any obvious exciting cause, such as exposure to cold, and, therefore, scarcely explicable on any other supposition than that of a contaminated condition of the blood. In duration it is usually protracted far beyond the ordinary term of existence of common inflammation.

The products of the inflammatory process are likewise different from those in ordinary inflammation. Instead of meeting, in fatal cases, with the evidence of acute inflammation, as afforded by vivid redness of the surface, and layers of firm, fibrinous lymph intermingled with pus, it is usual to find but little vascularity of the affected membrane, while the lymph is of a soft, curdy, flaky kind, floating in a pale milky fluid, and rarely deposited in tough laminated strata on the surface. Everything, in fact, tends to show that the inflammatory process is of a low form, and unattended by the characters of ordinary active inflammation. In part this peculiarity may be due to the state of general debility and anæmia which the renal disease almost invariably induces; but it is probably also, in great measure dependent on the cause which has given rise to the inflammation, namely, according to the view just stated, an unhealthy and irritating quality of the fluid exuded into the serous cavities, which fluid, like the serum of the blood, is more or less charged with the elements of the impeded urinary excretion. The fluid in the serous cavities being at all times, in renal disease, in an unhealthy condition, probably acts as a permanently local irritant of a more or less active kind, according to the amount of urea it contains. Hence may arise the peculiar dull, opaque, milky appearance of the various serous membranes, and the pale, slightly turbid, or flaky character of the fluid within them, met with so very frequently in fatal cases of renal disease, whether of the acute inflammatory kind, as after scarlet fever, or of the more advanced and degenerate form. When the serous fluid contains a considerable quantity of urea, in consequence either of rapidly-ensuing structural changes in the kidney, or of any sudden arrest of dropsy into the cellular tissue, or a catarrhal discharge from a mucous surface which had hitherto served in some measure to rid the blood of part of the excrementitious material accumulating within it, then the additional irritation thus produced lights up a more active inflammation in one or several of the serous membranes, and in this way may bring the disease to a fatal termination.

The several peculiarities just mentioned as belonging to the serous inflammations in renal disease are exhibited in the following few cases, which are of quite an ordinary kind. The following case, which is an example of inflammatory dropsy, probably consequent on the scarlet-fever poison, illustrates, among other points, the statement made above concerning the nature of the fluid usually found in the serous cavities in fatal cases of renal disease.

Case. Jane Robinson, aged 7, admitted into Mary ward, October 25, 1849, under Dr. Roupell, affected with extensive general anasarca. The surface of the body had the peculiar, pale, waxy appearance so common in acute renal dropsy; especially in children. She had a dry,

wheezing cough, and slight difficulty of breathing, explained by some mixed crepitations diffused through the lower half of each lung behind; but she complained of no pain; her aspect was bright and cheerful; tongue nearly clean, appetite good, and the bowels freely open; her urine, however, was scanty, pale, turbid, and highly albuminous; examined microscopically, it exhibited (*a*) a few blood corpuscles (*b*), a few fibrinous casts of urinary tubules, containing much granular material, with traces of corpuscles and nuclei (*c*), several free nuclei (*d*), large irregular masses of granular matter, and (*e*) numerous tesselated epithelium scales, separated and grouped,—no oil. The child had been ill for about seven weeks, its ailment commencing with slight feverishness, unaccompanied by either rash or sore throat, but followed, in a week, with desquamation of the cuticle of the hands; the attack was not sufficiently severe to prevent its playing about; but in about three weeks its abdomen rather suddenly began to swell, and the dropsy then speedily extended to other parts. A week before admission, cough came on, accompanied with difficulty of breathing, which, at times, became very urgent. In a day or two after admission, with increase in the cough and difficulty of breathing, a distinct, though soft and churning pericardial rubbing sound was detected in the cardiac region, and it continued, with increased cardiac dulness on percussion, to within two days of the child's death, when it gradually became indistinct. During the eight days it was under observation in the hospital, the child's cough and difficulty of breathing continued, and the latter gradually became more distressing, in spite of the various measures applied for its relief. The last twenty-four hours of its life were spent in a state of great distress from the urgent dyspnœa.

On examination after death, the kidneys were found larger than natural; the cortex extremely pale, though variegated with a few star-like bloodvessels; the medullary portion of a deep red colour. Through the capsule, but more distinctly on its removal, there were observed on the surface of each kidney, numerous closely-set, minute, pale yellow specks, like so many fine grains of sand, On section, the cortex appeared filled with the same yellowish-white material of which these specks consisted; the cut surface had the peculiar dull, yellowish-white, streaky appearance not inaptly compared to the section of a parsnip. Examined beneath the microscope, portions of the cortical structure exhibited the urinary tubules crowded and distended with granular matter and epithelial cells; the Malpighian capsules were similarly distended; while, over the field, were numerous large circular masses of granular material, which appeared to represent the minute grains seen with the naked eye on the cortex, and probably consisted of separated Malpighian bodies, with granular matter enclosed in the capsule. The pericardium contained about ℥ss. of turbid, whey-like fluid; while a few firm granules adhered to the root of the great vessels. In each pleural cavity were about six ounces of similar pale, turbid fluid; and about a pint of the same existed in the peritoneal cavity. There was no undue vascularity or recent deposit of lymph in any of the serous membranes. The heart was much enlarged, especially the left ventricle; the valves were all healthy. The lungs were pale, solid, and heavy, from extreme œdema

of the pulmonary tissue, though crepitant at all parts. Nothing worthy of note in relation to the case was observed in any of the other organs.

Here, in a recent attack of acute renal dropsy, the fluid in all the serous sacs presented the pale, milky character mentioned as being so generally observed in renal disease, even independent of any decided evidence of inflammatory action. The fluid, differing as it does from that transuded in cardiac dropsy, is evidently in an unhealthy condition, and may, in consequence, be supposed likely in time to induce irritation and inflammation of the delicate structure with which it remains in contact. Besides the illustration which this case seems to furnish in regard to the point just mentioned, it affords important information respecting the pericardial friction-sound perceived so distinctly during several days in the child's life-time; showing that this sign, when occurring in dropsy after scarlet fever, does not invariably indicate an active inflammatory process, to be combated by antiphlogistic measures; for there was no increased vascularity of the pericardial surface, or product of inflammation within its cavity, found after death. The cause of the friction-sound in this case must remain matter of speculation; possibly it depended on some dryness and roughness of the surface existing previous to the exudation of the serum found after death; for as yet we have no evidence that mere serum in the pericardial cavity can give rise to a perceptible rubbing sound—*Med. Times and Gaz., June* 25, 1853, *p.* 643.

59.—*On Diabetes Mellitus.* By M. SCHUTZENBERGER, Strasburg.—[From a case related by this gentleman, this disease may, by appropriate treatment, not only be arrested, but the patient restored to comparative health. The author concludes by the following rules and deductions.]

1. Glucosuria is not an incurable disease, and although the tendency to relapse is certain, it is possible, by perseverance, not only to remove the sugar from the urine, but also to bring the patients so far as to bear a varied diet, in which feculent substances may enter without causing a relapse.

2. The amount of glucose excreted by patients is sensibly proportionate to the quantity of feculent matter added to the food, and it is possible to discover errors of diet by the increase of the glucose in the urine. The quantity of urine is equal to that of the fluid ingested, and the latter also proportionate to the amount of the feculent substances taken into the economy.

3. Diet forms the principal part of the treatment of glucosuria; the food ought chiefly to consist of milk, fatty substances, butter, oil, eggs, and meat.

4. The entire banishment of feculents seems necessary to make the sugar disappear completely.

5. Small quantities of bread, viz., about three ounces per diem, are generally well borne, and do not excite a fresh secretion of sugar when once it has disappeared.

6. The powers of assimilation increase gradually, and it is possible,

by means of chemical analysis, to ascertain the extent to which the peculiar diet and medicine ought to be carried.

7. The effect of diet is powerfully assisted by the use of certain therapeutic agents, and especially by opium, in increasing doses, and by alkaline drinks. In this affection the tolerance of the opium is very great.

8. It is certain that the glucose is formed in the alimentary canal, and that the absorbents generally take it up, so that solid motions come to contain no sugar.

9. Purgatives may cause a diminution of glucose in the urine, as more or less of the sugar which would have passed into the urine is carried away by the liquid stools.

The author does not enter into any theoretical discussion touching glucosuria, as his object was merely to call attention to a series of interesting and instructive facts.—*Lancet, Aug.* 6, 1853, *p.* 120.

60.—CASE OF DIABETES.

[This case was related by Dr. Henry Kennedy, at a meeting of the College of Physicians in Ireland. It is in the words of the patient himself.]

"I first consulted Dr. —— in London in 1851. He immediately forbad me sugar, vinegar, bread, cereal food, or anything containing sugar. He ordered me half-ounce doses of liquor potassæ three times a day, and which, in six weeks, caused an immense deposit of the sulphates in my urine,—its specific gravity being often as high as 1040. At this period I lost flesh at the rate of 7lb. a fortnight, and was otherwise much reduced. I left off the medicine, found myself the better of having taken it, and shortly after became stationary in weight,—about sixteen stone. My diet at this time was very tiresome; and in August, 1851, I again saw Dr. ——, to try if he would alter it. He allowed me maccaroni, and a vegetable product called manna croup. I used these, and in addition ate bread very moderately, and also potatoes. When March, 1852, arrived, I found myself going back again; the urine heavier, and when tested with liquor potassæ fully as dark as the strongest coffee. I had been warned about the use of particular kinds of food, and since then have never tasted them; and my urine is now about 1022, and contains but a trace of sugar. My attention was first called to my own case by anomalous pains, which I could scarcely describe, and which were at first made light of. I had also a total loss of venereal appetite. The singular part of my case is, that I have never made an unusual quantity of urine; that it has its proper smell; and that I have not suffered from thirst or a dry skin; but the moment I eat cereal food the urine increases in specific gravity. I ought to state that the warm bath is part of the treatment, and this I use daily. A little brandy is the only good thing I take. I have never yet met any medical man who spoke of more than arresting a disease like mine: cures are said to have been performed, but there are none of a satisfactory kind."

Such was the patient's account of his own case. Dr. Kennedy then

directed attention to the special points in it: 1st. The enormous doses of the liquor potassæ; 2nd. The absence of thirst; 3rd. The small quantity of urine passed; and 4th. The active state of the skin. He also took occasion to state that there are numerous authentic cases of cure on record, and referred particularly to the seventh volume of the Edinburgh Medical and Surgical Journal in proof of this. He also alluded to the recent important discoveries of Bernard, who had clearly shown that sugar could be elaborated by the system itself; and hence, that the idea of cutting off the supply of articles containing sugar must in future be much modified. In conclusion, it was suggested that an entire change of climate might suit cases of this intractable disease.—*Dublin Quarterly Journal, August* 1853, *p.* 212.

61.—ON GOUT AS IT AFFECTS THE BLADDER.

By Dr. Robert B. Todd, F.R.S., &c.

[Preceding his observations, by mentioning some cases in which pus is found in the bladder, Dr. Todd goes on to consider the subject of gout in the bladder. He says:]

Gout appears to me to manifect itself in the bladder in four different ways.

1st. It manifests itself as a distinct and very obvious inflammatory affection; so that I imagine, in these cases, the mucous membrane of the bladder would be found red and inflamed, presenting, indeed, the ordinary appearance of a mucous membrane in a state of inflammation. This condition must, however, be distinguished from inflammation of the bladder, occurring from other causes, and unconnected with any specific inflammation. Gouty inflammation of the bladder is an analogous affection to gouty inflammation of the lungs, gouty bronchitis, or gouty pneumonia and gouty inflammation of the stomach. In cases of this kind there is a great tendency to the secretion of pus by the mucous membrane of the bladder. If there be any difficulty in the free evacuation of the pus, the urine becomes alkaline, from the retention of a small quantity of the secretion, and the subsequent decomposition of the urea; the highly alkaline urine, in its turn, keeps up the irritability of the bladder, and promotes the secretion of more pus. In this way, either a weak or paralytic state of bladder, or an enlarged prostate, or a stricture in the urethra may stand in the way of the complete restoration of this organ to its healthy functions.

2ndly. Gouty inflammation attacks the bladder in a different manner to that last described, so as to produce incontinence of urine. A gouty man becomes troubled with incontinence of urine, and we find that this incontinence depends upon a highly irritable state of the mucous membrane of the bladder, and a consequent inability of that organ to retain the urine, and not upon a paralytic state of the sphincter vesicæ muscle. In this form, the sensibility of the mucous membrane is very much exalted, and the bladder becomes intolerant of the presence of the smallest quantity of urine, so that the evacuation of its contents are constantly

taking place at short intervals. The prominent symptom then, in such cases, is frequent micturition of small quantities of urine, the urine being pale, acid, devoid of mucus or pus; sometimes, it may be, albuminous, owing to the existence of gouty disease of the kidneys.

It is difficult to define the exact pathological condition of the mucous membrane of the bladder in this affection. It is an irritable rather than an inflammatory state,—a condition in which the sensibility of the mucous membrane of the bladder is greatly exalted, owing to the influence of the gouty poison, which seems capable of irritating the bladder as cantharidine does. The cases in which it is apt to occur are generally in elderly persons, whose systems seem thoroughly imbued with gout, and in whom deposits exist in the joints, or the tendinous sheaths, or in the arteries. It occurs in old persons, and often accompanies enlargement of the prostate gland. Sir Benjamin Brodie describes cases which, I suspect, are of this nature, the primary cause of the symptoms being gout. He says, "An elderly man complains of frequent attacks of giddiness. Sometimes, in walking, his head turns round, so that he is in danger of falling; and this symptom probably arises from altered structure of the arteries of the brain, causing an imperfect state of the cerebral circulation. This state of things is sometimes attended with an irritable condition of the bladder, and, although the urine is of a healthy quality, and the bladder itself is free from disease, the patient is tormented with a constant micturition, voiding his urine without pain, but at short intervals, and in small quantity."

3rdly. A third class of cases exhibits a condition opposite to that which I have just described, in which, instead of the patient being unable to retain even a small quantity of urine in his bladder, he is suddenly or rapidly affected with an inability to pass water, and the bladder becomes distended in consequence, causing great pain and suffering. The essential difference between these two conditions consists in this, that in the former case the mucous membrane is rendered highly irritable by the gouty poison, and kept so by some irritating quality of the urine; but in the latter case the muscular coat is the seat of the affection. There is ample evidence to shew, that muscles may be attacked by the rheumatic or by the gouty poison. Thus, in subjects of gouty diathesis, it is not uncommon to meet with sudden and severe affections of external muscles, accompanied with constitutional disturbance similar to that of acute gout. I am just now attending a nobleman in whom very decided constitutional disturbance, accompanied by distressing intermission of the heart's action, preceded for some time the sudden appearance of a very painful inflammatory affection of the same portion of the gastrocnemius muscle on each side, which came on in the sudden way in which gout is apt to do. Lumbago is an instance of gouty affection of muscles. The intercostal muscles are often similarly attacked, giving rise to a most painful affection, which occasionally ends in pleurisy, or even pleuro-pneumony. Just in the same way gout may attack the muscular fibres of the bladder, stomach, or colon; and in the cases of retention of urine such as I am describing, it affects the muscular coat of the bladder so as to paralyse it, in a manner analogous to that in

which the active principle of belladonna may affect the muscular fibres of the iris, and cause a dilated, immovable pupil.

I will relate to you a case in illustration of this form of gout in the bladder. A barrister of great eminence in his profession, was obliged to return to town from his circuit, where he was largely employed, and, indeed, overworked. He had been seized with severe muscular pains in the thighs and loins, which I regarded as gouty. The patient was of a gouty family, generated lithic acid freely, and had passed a considerable quantity of lithic acid gravel. On a former occasion, I had attended him for one of those attacks of sudden affection of the intercostal muscles, (gouty pleurodyne, as I would call it,) passing on to dry pleurisy. For these reasons, I was justified, I think, in regarding and treating these pains as gouty in their character. After he had been three or four days under treatment for this affection, he found, one morning, on attempting to empty his bladder, that it refused to discharge its contents. A complete paralysis of the bladder had taken place, and evidently not from too great distension, as the patient did not suffer much inconvenience, and the quantity of water which had accumulated was not considerable. Under a soothing treatment, with slight counter-irritation over the region of the bladder, this paralytic state gave way within four-and-twenty hours, but it was several days before the full power and tone of the bladder were restored.

4thly. Gout attacks the bladder, in some cases, as follows, (and I take my remarks on this head from a case which actually came under my notice:)—A gouty man indulges more freely in the delicacies of the table than he is usually wont to do; perhaps he is guilty of some indiscretion in what he partakes, eating cheese or some other indigestible matter which disagrees with him, and, before he goes to bed, he is suddenly seized with violent pains in the region of the bladder, which in some cases lasts an hour, but in others continues to torment the patient for two or three hours, preventing him from sleeping, and often producing great distress. This condition is usually relieved by free counter-irritation, and the administration of alkalies.

If then, you find a man labouring under any of the four conditions that I have described, and at the same time you are able to discover from his history symptoms characteristic of a gouty diathesis, and you are convinced of the absence of calculus, you may feel satisfied that the symptoms are dependent upon a gouty inflammation of the bladder, and your treatment will be influenced accordingly. It must, however, be borne in mind, that a stone will cause the development of very similar symptoms, and it will, therefore, be necessary to sound the patient carefully, in order to determine the presence or absence of stone. The sudden invasion, the existence of the gouty diathesis, and the absence of other causes to account for the symptoms present, mark the peculiar nature of the affection, and concur in making us suppose the disease to be of gouty nature. Being decided as to the diagnosis, what means are we to adopt to relieve the symptoms? The treatment in these cases is obvious and simple. First and most important, then, is free counter-irritation; but you must apply your counter-irritation carefully, and consider what form of counter-irritant will be best suited to the case. Blisters would be improper, because cantharidine, which is the active principle of the

blister, is a direct irritant to the mucous membrane of the bladder, and would tend, therefore, rather to increase the distress. Turpentine must not be employed either, because it irritates the kidneys, and the irritation is liable to be propagated to the bladder. Mustard is the most effectual counter-irritant which we can use in these cases, and has not the disadvantages of the former remedies. Strong ammonia may likewise be used as a counter-irritant. Our next consideration must be to relieve pain, which in many cases is a most urgent symptom, and we should endeavour to effect this in the speediest and safest manner possible. If the affection be of the first form, where pus is generated, the best course to pursue is to give an opiate in some way or other. This may be done by the endermic method, by rubbing in a strong opiate liniment over the region of the bladder. Or, what is much better, and more certain in its action, the opium may be given in the form of an enema injected into the rectum. About half a drachm of laudanum, mixed with a small quantity of decoction of starch, of which not more than an ounce and a-half, or two ounces, should be employed, may be gently injected into the rectum, and you will find that it acts as a sort of warm poultice, containing opium, to the bladder; and in this way all kinds of irritability of this organ may be relieved. The irritable state of the bladder caused by cantharidine (strangury) is effectually relieved in the same way, and gouty inflammation is benefited in like manner. The action of cantharidine, indeed, forms a pretty illustration of the manner in which we may suppose the gouty poison to cause the vesicle irritability, and they may both be relieved in a similar manner. If the patient is not quite relieved after the administration of the first enema, you need not be afraid to give a second, provided that you are sure he exhibits no peculiar idiosyncracy with respect to opium. In many cases of this kind you may give opium also with advantage by the mouth, and especially in combination with sudorifics.

With reference to the treatment of all cases of gout, where the disease is apt to attack internal organs, I may give you this practical hint, and I strongly advise you to bear it in mind whenever you may be called upon to treat gout of this nature. It is this, that these cases are of an asthenic character, and do not bear depletory measures; so that if you find a patient labouring under gout of the stomach, or gout affecting the bladder, you must not think of applying leeches, and employing the treatment which would be applicable to other forms of inflammation of these organs; for the abstraction of even so small a quantity of blood as would be taken by the application of a few leeches might do the patient serious mischief, and cause prostration from which he might never rally. On this point Sir Benjamin Brodie has expressed a similar opinion; for he lays it down, that antiphlogistic treatment is inapplicable to that particular form of inflammation of the bladder which is of a gouty origin. With regard to the exhibition of colchicum, I am of opinion, that, in many cases, it is inadmissible, and, in all, it should be given with great caution and circumspection; for this so-called specific is certainly very depressing in its influence, and therefore unsuitable to cases which partake of the asthenic character.

The treatment which, in my experience, has been most beneficial for gout, when it attacks any of the hollow viscera, consists in employing free

counter-irritation,—keeping up a moderate action of the bowels,—paying attention to the functions of the skin, and promoting the action of this great secreting surface by the exhibition of sudorfics. Provided the urine be not alkaline, the administration of alkalies will be found of service, and opium is employed with great advantage for allaying the irritability of the affected organ, which is often productive of great distress to the patient.

As I have before hinted, there is much resemblance between the gouty affections of the bladder and those of the stomach. In the latter organ, gout shows itself by the sudden development of violent pain referred to the stomach. This is often attended with the generation of gas in immense quantities, which distends the organ. Another form is, when the stomach is impatient of the smallest quantity of food, as the bladder is of urine. Incessant vomiting is the characteristic symptom of this form of the complaint. Sometimes these symptoms exist together. In other cases, the muscular coat becomes greatly weakened, and the food is pushed on only very slowly into the bowel. It accumulates in and distends the stomach, which becomes dilated and large, and by reason of the atonic state of the organ remains so. In all the forms of the complaint, but in none more than in this last form, the tendency to the generation of gas is a very prominent feature.—*Med. Times and Gaz. May* 28, 1853, *p.* 539.

SURGERY.

AFFECTIONS OF THE BONES AND JOINTS.

62.—IMPROVED FRACTURE APPARATUS.

By Henry Greenway, Esq., Plymouth.

[Mr. Greenway invented this apparatus while a student at King's College Hospital, and it has been favourably noticed by Mr. Fergusson in his recent work, 'Practical Surgery.' Since that time, however, he has considerably improved the apparatus, which he describes as follows:]

Two tension-rods, *a a*, extend, one on either side, and unite in a curve at one end; on these are slides, *b b**, which support two iron plates, *c c**, so bent as to present two sides at right angles with the floor; the one, *c*, being designed for counter-extension, can be moved to any given point, and there fixed with a check-pin; the other, *c**, by means of which extension is to be made, is mediately attached to a screw, *d*, which pierces, in a central line, the tension-rods at their point of junction. On this screw is a nut, *e*, by whose action against the rods the requisite extension and counter-extension forces are obtained.

Within each bent plate, *c c**, are two pressure pads, one on either side *f f**, which are moved towards each other by means of a nut and screw, as shown in Fig. 2, and thus made to embrace the limb.

A back-piece, or floor, *g*, on which the limb is to be placed, extends nearly the whole length of the apparatus; it is fixed to the bent plate, *c*, but merely rests on the one *c**, at the opposite end; so that, when extension is made by turning the nut *e*, the bent plate *c** is drawn to a greater distance from the other.

Fig. I.

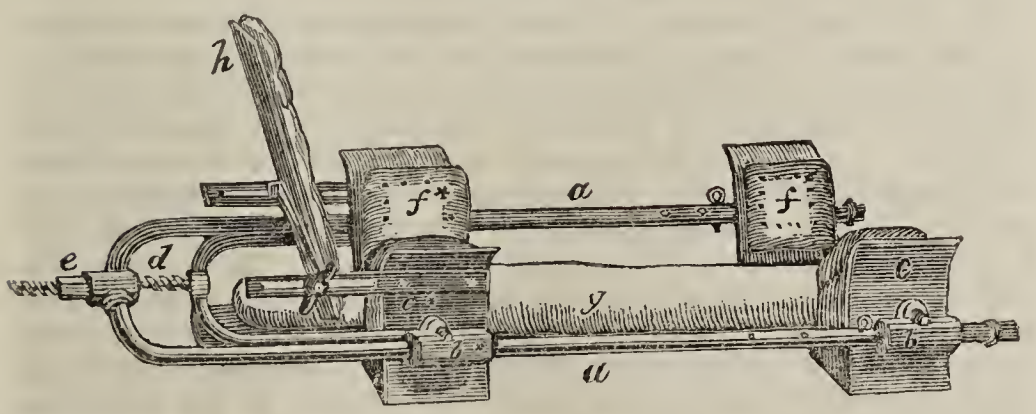


Fig. 1. *a a*, tension-rods; *b b**, one of the slides of each bent plate; *c c**, bent iron plates; *d*, a screw, on which is a nut, *e*, for producing extension; *f f**, one of the pressure-pads of each bent plate; *g*, back-piece or floor, with pad; *h*, foot-piece, with pad.

Connected with the bent plate c^* is a movable foot-piece, *h*, intended only to keep the foot in a proper position, except when the fracture involves the malleoli. The back-piece and foot-piece are to be supplied, each with a separate pad, as shown in the drawing. The apparatus being suspended by four straps from an iron cradle, a swinging motion of the limb is enjoyed by the patient.

Fig. II.

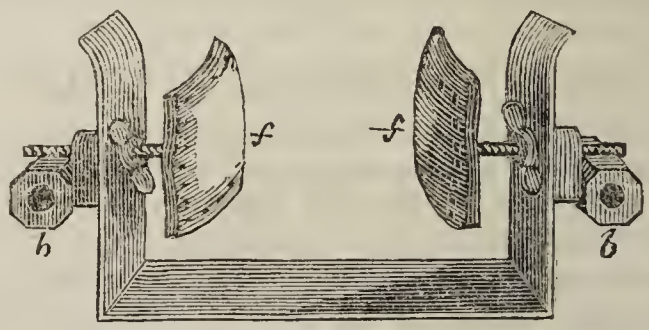


Fig. 2. One of the bent plates (*c*, Fig. 1) removed from the apparatus to show more completely its mechanism, and the action of the pressure-pads. *b b*, the slides which support it on the tension-rods; *f f*, the pressure-pads; proceeding outward from each is a screw, which passes through the side of the bent plate, and on this screw (between the pad and the plate) is a nut which, when worked against the plate, forces the pad towards its fellow.

It will thus be seen, that the chief novelty of the apparatus lies in the bent iron plates, with their pressure-pads, which afford the following advantages:—

1. Free circulation throughout the limb, as the popliteal space and the back of the leg are entirely free from pressure.

2. Sloughing at the heel is obviated, as it need only rest slightly on the back-piece, the ankles being almost supported by the pressure-pads.

3. The broken portions of bone being brought into apposition, are not liable to be thrown out of place by spasmodic action of the muscles.

4. The limb, if the fracture be compound, can be dressed and exposed between the points of extension and counter-extension, without the extended state of the limb being interfered with.

The following is the mode in which a fracture should be treated when this instrument is used;—A doubled piece of sheeting, about four feet in length and nine inches wide, should be thrown across the back-piece in the space between the bent plates, and its ends allowed to hang equally on either side. A flannel roller should then be applied with some degree of firmness around the foot and ankles, and the limb afterwards placed on the back-piece, the distance between the two bent plates having been first regulated according to the length of the limb. The pressure-pads with any extra padding which may be required, should now be firmly fixed, the one pair, *f*, against the side of the leg, just below the knee; the other pair, f^*, a little above the ankles. An assistant should then make extension by turning the nut *e*, the surgeon at the same time adjusting the broken portions of bone. That being done, the foot-piece must be placed against the sole of the foot, and be slightly bound to it by a turn or two of a bandage, merely to keep the foot in a natural

position; and the ends of the sheeting before mentioned, folded up smoothly, and laid against the sides of the limb, are to be there retained by means of straps, as is usually practised in such accidents.

When a fracture involves the malleoli, the pressure-pads, *f*, having been brought to bear firmly on the limb, the foot-piece with its pad should be firmly attached to the sole of the foot by means of a bandage, and then fixed. Extension should next be made by turning the nut *e*; and the fractured portions of bone being adjusted, the pressure-pads, *f**, may be brought slightly in contact with the ankles. The remaining treatment is as before described.

In some instances, it may be found necessary, if there be much swelling, to dispense with the sheeting, in order to use fomentations, &c.; but if there be little or no swelling, a many-tailed bandage may be applied from the ankles to the knee, after the fracture is adjusted.—*Med. Times and Gazette, July* 23, 1853, *p.* 99.

63.—MR. WINCHESTER'S NEW METHOD OF TREATING FRACTURES, WITH A DESCRIPTION OF A SUITABLE APPARATUS.

[This apparatus is best described in Mr. W.'s own words. He says:]

My invention consists of joints of wood, metal, or other suitable material, and of convenient length, which have the power of being fixed at any desired angle. By this arrangement we are enabled to take and retain the exact shape and form of any portion of the body, thereby forming a perfect model of the sound or healthy part, and consequently a complete support for the corresponding injured and diseased part. Its advantages are these:—It gives confidence and certainty to the surgeon in the treatment; and being applicable to all cases, and exceedingly portable, effects a great saving of time, (especially to the country surgeon), and suffering to the patient. A full-sized splint can be folded into a space of fifteen inches by three wide, and three deep; can be carried round the waist as a belt, or in the pocket.

My objections to the splint at present in use are,—1st. That they are all, without exception, straight; and it is evident the binding a naturally curved limb to a straight splint must tend to straighten such limb. Again, they keep the patient too long in one position, producing at times considerable mischief, and even sloughing. This also at times occurs from the injurious pressure arising from the use of screws or other contrivances for the purpose of extension. With regard to *extension*, I would remark, and I believe it will be admitted by most surgeons, that the difficulty arises, not so much in reducing a fracture, as in keeping the parts in apposition after reduction. With extension there must be counter-extension, which requires to be in constant operation; for if withdrawn, the apparatus becomes useless; and, moreover, any straining beyond what is natural fatigues the muscles, irritates the patient, and impedes union. I object also to fixing the splint—as is in some instances

done—to the bed, or a board provided for that purpose. The splint not moving with the limb, the least sinking in bed or motion of the body must alter the relative position of the ends of the bone, particularly in oblique fractures, which results in shortening.

By the use of my splint all these imperfections are remedied. The exact natural length and shape being preserved, there is no necessity for extension, or chance of displacement. It affords perfect support throughout the entire shaft of the bone; the parts being retained in their original natural position, become quiescent, and nature has only to repair. It is also applicable to the upper extremity—to the spine, and, indeed, to any part of the body requiring artificial support.—*Lancet, Aug.* 20, 1853, *p.* 169.

FIG. I. FIG. II.

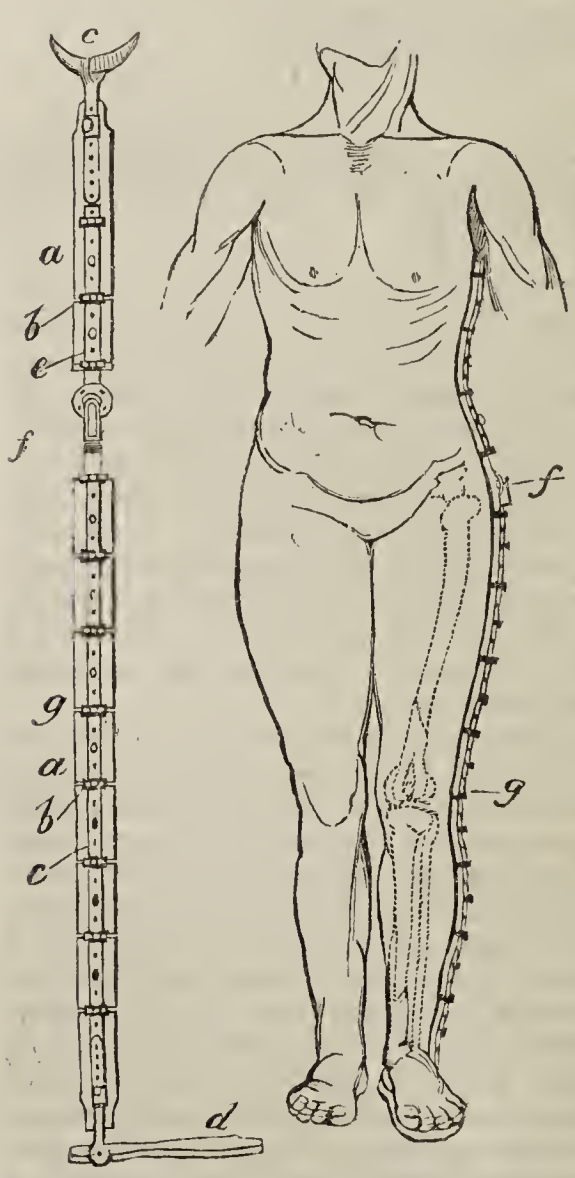


FIG. 1 shows the splint.
a a. Pieces of wood, metal, &c.
b. Joints which are fixed at any desired angle.
c. A crutch for the axilla, if necessary; and
d. The foot-piece, both of which can be regulated to any length or angle.
e. Studs for the straps.

FIG. 2 shows the splint applied to the broken side, after being adjusted to the opposite uninjured one. It will be perceived that even should both thigh and leg be broken, the same adjustment does, showing a great superiority over all other splints. It can be lengthened or shortened at pleasure, and a piece removed from any part, should there be a wound, without deranging the adjustment.
f. Ball-and-socket joint for hip.
g. Hinge-joint for knee.

Fig. III.

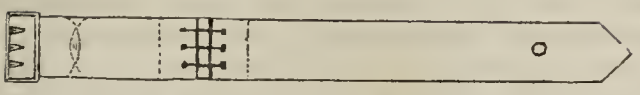


Fig. 3 shows the straps used in the application of the splint. The size of the sound limb is taken when the splint is adjusted by means of the buckle with the lacing fastened. When applied to the injured limb the original size is still maintained by the buckle; and should swelling occur the lacing is loosened, allowing the strap to expand by means of a piece of vulcanized India-rubber inserted. As the swelling subsides the strap goes back to its original size, and is again laced. By this means the necessity of loosening the strap is avoided.

64.—CASE OF AMPUTATION OF THE HIP-JOINT.

Under the care of C. G. Guthrie, Esq.

[This patient, a man aged 50, noticed a swelling about the thigh eight years ago. A year before he was admitted, the pain began to be very severe, developed rapidly, and the man's health began to fail. As there could be no doubt of its malignant character, amputation was decided upon; but as several cases had happened where the disease had returned, —if a portion of the shaft had been preserved,—Mr. Guthrie decided upon amputation at the hip-joint. Considerable interest was excited by this operation, several of the most eminent surgeons being present.]

The patient was so placed that the ischia were a little beyond the margin of the table; and the sound leg (left) having been as widely separated from the affected limb as practicable, Mr. C. Guthrie placed himself on the man's right side, and prepared to use a knife, made for the purpose, about fourteen inches long and two inches wide at the handle. This knife was introduced horizontally from without inwards a little above the great trochanter, and the point made to emerge close to the scrotum, which was carefully held aside. By cutting horizontally along the anterior margin of the bone and then upwards, for about four inches, the knife was liberated, and the anterior flap formed. The latter was immediately raised by the assistants, and presented a rather unusual appearance, both from its size and the naturally considerable gush of blood which took place both from the flap itself and the lower traumatic surface. Mr. Guthrie now divided the capsular ligament, and run the point of his knife between the head of the bone and the cotyloid cavity, so as to divide the round ligament.

The limb at this time should have been strongly rotated outwards, but this could only be imperfectly done, as the rigid knee and the rather low table prevented the assistants from accomplishing their purpose. When the knife had separated the rotator muscles, the handle was close to the scrotum; and, without changing its position, Mr. Guthrie made it glide along the posterior portion of the bone for about three inches and a half, and by cutting downwards made the posterior flap, thus completely separating in less than two minutes such a considerable portion of the patient's frame.

The assistants immediately covered the bleeding surfaces with sponges, and now began the very important business of securing the vessels. This was done first for the upper flap, whilst the lower was being compressed, and the hemorrhage became more and more feeble as the ligatures were successively and carefully placed on the arteries. The vessels of the lower flap were now secured in the same manner and with great rapidity, so as to render the loss of blood as inconsiderable as possible; and the two huge flaps soon presented an extensive, unequal, deep red, muscular surface, from which merely a little venous oozing was going on.

The patient became at this stage rather faint and pale, but a little cold water to the forehead sufficed to restore him. The flaps were now approximated, and their margins kept in contact by sutures, strips of adhesive plaster, and appropriate dressings. The patient's bed was brought into the theatre; he was gently placed on it, and seemed on opening his eyes to have retained a comparatively large amount of animation.

When the man had been removed, Mr. C. Guthrie addressed the gentlemen present, and stated that the method in which the operation had just been performed might be called Mr. Brownrigg's. He had been induced to remove the limb at the hip-joint, because the disease had returned in another patient likewise suffering from malignant disease of the femur, on whom he had performed amputation of the thigh close to the trochanter three years ago. This first patient had made a good recovery, and had married; but he unfortunately had a fall upon the stump; an abscess formed, the disease returned, and he died one year after the operation. The bone at the trochanter had at the time of the amputation been pronounced sound by very high authorities. No disease whatever of the viscera was found on a post-mortem examination. The limb just removed had been sent to the College of Surgeons to be injected and examined, and he (Mr. C. Guthrie) would be happy to acquaint his professional brethren with the actual pathological state of the part.

The patient remained very quiet and comfortable for the remainder of the day, and spent a comparatively good night, sleeping for a couple of hours at a time. The next day was not marked by any untoward symptoms, the patient took sustenance, and was not complaining of any pain, when at two o'clock in the afternoon a gush of blood was noticed to take place from the dressings. Assistance was immediately procured, the dressings were taken of, but the hemorrhage had ceased, and when Mr. C. Guthrie arrived, no trace of bleeding was observed. A large and clean piece of lint was placed under the stump, so that the least amount of hemorrhage could be perceived, but it had completely stopped. It was not thought advisable to remove the sutures and separate the flaps, as it was apprehended that the shock might act very unfavourably upon the patient. But the latter was becoming more and more weak, and, in spite of ammonia, brandy, &c., he died at five o'clock.

A post-mortem examination was made on the following day, when all the viscera were found completely healthy, though in a very exsanguineous state. The stump contained a quantity of coagula which might have

filled a large tumbler, and when these were removed, the vessel from which the hemorrhage had proceeded was looked for. No open mouth could be distinguished; but after water had been forced into the external iliac artery, the fluid was seen to come out from a vessel which was judged to be a branch of the circumflex artery. It is very probable that the hemorrhage from this vessel had stopped when the patient became faint, but that enough blood had been lost, as proved by the coagula, to lead to a fatal issue.

The unsuccessful results of this case indicate very clearly that it is advantageous to postpone the approximation of the flaps until reaction has taken place. Had the latter been immediately opened at the least sign of hemorrhage, the case might possibly have taken a more favourable turn. We consider this as an accident to be guarded against, but which does not throw any discredit on the operation itself. Many patients have been lost by secondary hemorrhage after comparatively trifling operations, and as the shock after amputation at the hip-joint is much diminished by the use of chloroform, the sources of danger are principally the loss of blood on the table and afterwards, and the subsequent profuse suppuration.—*Lancet, April* 30, 1853, *p.* 416.

65.—ON EXCISION OF THE KNEE-JOINT.

By R. J. Mackenzie, Esq.

[Not only has an unfavourable impression been produced against this operation, but severe censures have also been passed upon the operators. Mr. Park, of Liverpool, in 1783, first prominently noticed the operation, but it had previously been performed successfully by Mr. Filkin of Northwich. After these, Moreau operated in three cases, two of which were fatal. In 1809, Mülder operated upon a pregnant female—she died some months after from tetanus.]

The next notice of the operation is by Mr. Crampton, in 1823. The operation in Mr. Crampton's first case can scarcely be said to bear on the question of excision of the knee-joint; not only were the patella and part of the tibia removed, but upwards of six inches of the thigh bone were taken away. The patient, however, lived upwards of three years after the operation, and then died from phthisis. Mr. Crampton, in his remarks on the case, says, that it "was one to which the operation of excision was not applicable." The disease had proceeded too far; for, even had it been possible to have removed the whole of the diseased bone, and that union had taken place between the femur and tibia, the limb, from its shortness, would have been useless. The operation was performed in the same year in a second case by Mr. Crampton. The girl, although a most unmanageable patient, made an excellent recovery. Six months after the operation, the femur and tibia were consolidated by a firm bony union. Eight months later, she is reported as being able to walk a distance of nearly five miles at once; and upwards of three years after the operation, Mr. Crampton says:—"I have examined the limb, and find that the femur and tibia are firmly consolidated; the leg and

thigh are not in the slightest degree wasted, butt he limb is considerably bowed outwards; she wears a shoe with a cork sole four inches thick; and, to use her own expression, 'is able to stand or walk the length of a day.'"

The operation was next performed by Mr. Syme, who, in 1829 and 1830, excised the knee-joints of two children, of seven and eight years of age. Up to this time the operation had only been performed in adults. The result in the second case was unsuccessful, the child having died about ten days after the performance of the operation. Writing in 1831, Mr. Syme gives the following satisfactory account of his first case:—"In the course of four weeks after the operation, the wound was all but healed, and the limb, before the expiration of three months, had regained so much strength that the patient could make some use of it in walking. It has been progressively improving since, and is still doing well. I have no doubt that ultimately it will be nearly as useful to him as ever; but even at present he would be very sorry to exchange it for a wooden one. He can walk and run, though with a halt, without the constrained appearance of a person with an artificial leg, and merely requires the *heel* of the shoe to be two inches higher than the other. The limb is stout and well nourished, and though slightly bowed outwards, does not occasion any disagreeable deformity; it allows a slight degree of flexion and extension." Seventeen years later, however, a much less satisfactory account of the same patient is given. In speaking of excision of the knee-joint, in 1848, Mr. Syme says:—"I tried the operation nearly twenty years ago on a boy, who recovered perfectly from it, and seemed at first to possess a limb little inferior to its fellow, except in so far as it was stiff at the knee. But in the course of time it was found that the growth of the two limbs was not equal, and that the one which had been the subject of operation gradually diminished in respective length, until it wanted several inches of reaching the ground, when the patient stood erect,"

After Mr. Syme's experience in 1830, the operation seems, as far as I can ascertain, to have been abandoned till within the last three years. The results of the operation on the whole had been decidedly unsatisfactory.

In 1850, the operation was revived by Mr. Fergusson; and within the last three years the operation has, as far as I can ascertain, been performed thirteen times: in three cases by Mr. Fergusson, in six cases by Mr. Jones of the Island of Jersey, in one case by Mr. Page of Carlisle, in one case by Dr. H. Stewart of Belfast, and in two cases by myself. Of the results of these cases I shall give some details immediately. Of the thirteen, three have died, two directly from the effects of the operation, and one from dysentery. The remaining ten are, as far as I know, at present alive. In five the limb is already used freely in progression; in one the result, as regards the usefulness of the limb, is yet uncertain; in one, I am ignorant as to the result; in the remaining three, sufficient time has not yet elapsed to render the result certain, but of each the most favourable expectations may be entertained.

Such is a brief outline of the history of all the cases in which, as far as I can ascertain, the operation has hitherto been performed, and I

think I am justified in saying, that an impartial review of these cases, especially of the later series, at least proves that the propriety of the operation is yet an open question.

[Dr. Mackenzie, after cursorily examining the cases of this operation occurring within the last three years, proceeds to defend those who have been censured for reviving the operation. He says:—]

The propriety of attempting to save a limb by excision of the knee-joint, seems to depend on the three following considerations:—1st. Is the operation of excision attended by greater or less danger to life than amputation of the thigh? 2nd. In the event of recovery after excision of the knee-joint, is the limb more or less useful and seemly than a wooden leg? 3rd. Does the long confinement to the horizontal posture, which is necessary after excision of the knee-joint, in any measure counterbalance the benefits of the operation (if such benefits are proved) as compared with amputation of the limb?

A careful consideration of these questions and of the recorded results of the operation, led me several years ago to doubt the propriety of the operation having been rejected from surgical practice. I satisfied myself, by repeated trials on the dead body, that the operation could be performed without difficulty, and without the risk of wounding any important parts; and, as a teacher of surgery, I have been in the habit of mentioning to my pupils my impression that the operation had been rejected from practice on insufficient grounds. Knowing, however, the objection of my hospital colleagues to the operation, I never requested their sanction in carrying it into execution, till the late experience of Mr. Fergusson and Mr. Jones appeared to me to warrant my urging the question more closely on their attention, and my performing the operation in the cases which I have related.

With regard to the considerations which I have suggested as principally bearing on the merits of the operation, I would submit,—1st, That the danger of the operation may be reasonably expected to be less than that attending amputation of the thigh. The wound necessary for the removal of the diseased bones is less extensive than the wound of amputation of the thigh, whether performed by the circular or flat operation. The large vessels and nerves are not divided in the operation, the parts involved in the incisions being principally the integuments and ligamentous apparatus of the joint; the medullary canal of the bone is not laid open, a point which has of late years been suggested as of some consequence in diminishing the dangers of amputation; the shock, which always attends, to a greater or less degree, the sudden removal of a large part of the body, is avoided.

Time and experience, however, can alone determine the comparative danger of the two operations. In the meantime, the results of the limited number of cases in which the operation has been recently practised, prove, as far as they go, that the danger to life is not great; and unless some unforeseen accident should occur to the cases, which are at present in progress of convalescence, that the danger is inferior to that of amputation.

2d, With regard to the usefulness and the seemliness of the limb, I

need only refer to the account I have given of the results of the operation in Mr. Jones' hands, to show that the limb may retain a degree of usefulness which can never be attained by the wooden leg in common use, nor yet by the most expensive and efficient artificial limb which I have ever seen; and if, in the days of Mr. Park, such a result could be obtained as that a man, whose knee-joint had been excised, could run up the rigging and perform all the duties of a seaman, surely, with all the resources of modern surgery, we ought to obtain an equally satisfactory result now.

3d, The remaining objection to the operation is the tediousness of the convalescence. This, I think, unquestionably detracts, to a certain extent, from the benefits of the operation. I am doubtful, however, after all, whether the recovery can be proved to be on the whole more tedious than the recovery from compound fracture of the leg; in some cases even the limb seems to have been restored to usefulness as soon as the patient would have been able to walk on a wooden leg, had the limb been amputated. In Mr. Syme's case, for instance, "in the course of four weeks after the operation the wound was all but healed, and the limb, before the expiration of three months, had regained so much strength, that the patient could make some use of it in walking."

Mr. Syme, in another place, says, "It ought to be recollected, too, that, though recovery from amputation of the thigh is usually completed in three or four weeks, it is generally *at least as many months* before the patient can rest the weight of his body on the face of the stump, so as to use it in standing or walking."

Another objection has been brought forward against the operation which requires to be noticed, viz., that, when the operation has been performed on children, the growth of the limb has been checked, and that, consequently, from the unequal growth of the two limbs, that on which the operation has been performed becomes so disproportioned to the other as to be ultimately useless. The only practical proof of this being so, which I can find, is Mr. Syme's case; and I think it is possible that it might be attributed in this instance to anchylosis not having taken place. Experiments have been performed on animals to show that bones do not grow when deprived of their heads, but the results do not appear to be conclusive. A few years will be required to confirm this as a valid objection to the operation. Mr. Jones has, in the meantime, made accurate measurements of the limbs of the three boys on whom the operation has been performed, and will have an opportunity of giving further information on the subject hereafter. I have, in an earlier part of this paper, mentioned the fact, that the limb in one of Mr. Jones' cases had already, since the operation, grown considerably, and presented now no appearance of checked growth. As bearing on this question, I would be glad to know if the growth of the upper extremity is checked by excision of the elbow-joint. It is so, as far as I remember to have observed, only in a slight degree. Surely the numerous children who have undergone this operation at the age of six or seven, have not grown to adult age with the stunted arm and hand of little more than an infant. Supposing, however, that the fact is so—that the limb is so much *respectively* shortened in after years—the objection ap-

plies only to the operation being performed on children, and has nothing to do with the question of the propriety of excision in the adult.

I have suggested that an error has, till lately, been committed in the performance of the operation, which has been allowed to interfere most seriously with its result. I refer to *the removal of the patella.* It is said that the patella is generally extensively diseased in affections of the knee-joint demanding excision or amputation: this, I have no doubt, is an error. The amount of disease to which it is liable is very limited,—in the great majority of cases consisting only in its being more or less deprived of its cartilage, and of a rough, or perhaps carious condition of its articular aspect. The patella is rarely, if ever, the primary seat of the disease in affections of the knee-joint. When the disease commences in the bones, it invariably does so in the cancellated texture of the head of the tibia, or condyles of the femur. It is extremely rare that there is such extent of disease in the patella as to prevent its easy and effectual removal by the gouge, the body of the bone being left uninterfered with. The advantage of leaving the patella cannot fail, I think, to be very great. The natural form of the joint is preserved; the attachment of the extensor muscles is left undivided; the wound is less extensive; the annoying tendency to displacement forwards of the end of the femur seems, in a great measure, to be done away with; and there is every reason to believe that the consolidation of the bones will proceed more rapidly, and the limb ultimately be found both more useful and more seemly than when that bone is taken away. This is a point, however, which remains to be proved. In the two last cases, however, in which the operation has been performed by Mr. Jones and myself, the patella has been left, and the advantages of its having been retained are already apparent in each case.

I shall not lengthen this paper by describing what appears to me the best mode of performing the operation, but merely mention that the semilunar incision seems to me the most advantageous, as being the smallest by which the joint can be satisfactorily exposed, and as giving rise to less bleeding than the H-shaped incision. There is one point, however, to which I wish to direct attention. It has been recommended that a considerable portion of integuments should be removed by a double lunated incision, to prevent the redundancy of skin which might be expected from the large amount of bone removed in the operation. I believe that this advice, if followed, will lead to great annoyance. I have not removed any portion of integuments in the cases in which I have performed the operation, notwithstanding which, the retraction of the skin was such as to cause, in each case, more or less gaping of part of the wound. Mr. Fergusson mentioned to me that he had removed a small portion of integuments in the operation, in the case now in King's College Hospital, and that, during the patient's convalescence, he had much reason to regret having done so, as the retraction of the integuments was such as to leave part of the end of the femur uncovered, and a thin cicatrix only now covers this point of bone.—*Monthly Journal of Med. Science, June* 1853, *p.* 526.

[At a meeting of the Edinburgh Medico-Chirurgical Society, after a paper had been read on this subject by Dr. Mackenzie,]

Mr. SYME said that nothing could be more praiseworthy than trying to extend the means of affording relief by surgery, but as every step in advance was necessarily experimental, it should be understood that there were two sorts of experiments—the *experientia erudita* and the *experientia vulgaris*. In the former, a process of reasoning led to the expectation that certain causes would be followed by certain effects; but in the latter there was no such foundation for the procedure, which was executed simply with the view of obtaining results. He thought it needless to detain the Society by showing that the only warrantable experiments on the living bodies of human beings were those of the former kind; and would endeavour to explain the considerations which induced him to regard excision of the knee-joint as a dangerous and unprofitable proceeding. The large size of the wound, which was just double that of amputation, and the want of a dependent opening for the matter to escape, must be apt to occasion a profuse and protracted discharge,—dangerous directly from its exhausting effects, and indirectly from lighting up disease in the pulmonary or intestinal textures, especially in subjects predisposed to such derangements, as most patients requiring the operation were. The strong and irregular action of the muscles must render it difficult to prevent displacement of the bones, impede their osseous union, and favour anchylosis, when it did occur in some awkward position. The ample experience obtained from excision of the elbow-joint -which he had himself performed little short of a hundred times,—showed that many months, or years, or even a whole lifetime, might elapse before the wound was so completely consolidated as not to suffer occasionally from small collections of matter in and about the cicatrix, which interfered little with the patient's comfort, as they did not affect the usefulness of the hand or the strength of the arm, but would entirely unfit the inferior extremity from being employed as a support for the body. In children the danger of the operation would be probably less than in adults, and the chance of consolidation greater. But, on the other hand, there was reason to fear that the limb would not grow proportionally, and remain in the shrivelled condition usually consequent upon spontaneous anchylosis. The results already obtained were confirmatory of these theoretical considerations. Although the operation had been limited to cases favourable for recovery, a large portion of the patients, whose fate could be regarded as decided, had perished. In some cases there had been no osseous union; and in others, anchylosis with miserable deformity. Thus in Sir P. Crampton's only successful case—the famous one of Ann Lynch—who "could walk the length of a day"—it appeared from the bones which were in the Lincoln's-Inn-Fields Museum, that the tibia and os femoris were united at a right angle, so that the progressive motion must have been of a very rare and remarkable kind, while the subject of Mr. Park's never to be too frequently quoted case, probably made a better appearance, climbing up the rigging of his ship like the quadrumanous inhabitant of a tropical forest, than he would have done as a biped on terra firma. He therefore did not feel warranted to substitute this operation for amputation, which, when properly performed, relieved the patient with little risk, and enabled him to obtain an adequate support far more useful to a poor man and

ornamental to a rich one, than could be procured through all the suffering, prolonged treatment, and risk of life attendant upon removal of the articulation. But in saying this, he begged it might be distinctly understood, not as an attack upon any other person, but simply as a defence for himself, for declining an experiment which did not in his mind possess the proper requisites of an *experientia erudita.*—*Monthly Journal of Medical Science, July* 1853, *p.* 89.

66.—ON EXCISION OF THE KNEE-JOINT.

By Henry Smith, Esq., Surgeon to the Westminster General Infirmary.

[The success which has attended this operation since 1850, seems now to be in a fair way to set the question of its value at rest. Out of the three cases operated on in London during the last two years, two have died. The following are the particulars of the last case:—Emma Saville, aged 28, unmarried, noticed eleven years ago, that her left knee became swollen and painful, and, though it got well, yet it very often became affected in the same way. She had been admitted into King's College Hospital on various occasions for its relief. The last time she applied its appearance was as follows:]

Left knee much larger than the right, the chief difference being over the head of the tibia. The joint is bent outwards, as though there had been a partial dislocation. Considerable pain is experienced through the joint, and is much aggravated in the night. On rubbing the bones together, a very distinct grating is experienced; any attempt at motion on the part of the patient gives intense pain. There is no disease whatsoever of the soft parts, and the swelling is not great, and there does not appear to be any, or at least any quantity of, fluid within the joint. Her general health is weak; she has lost much flesh, and the countenance is of a sallow and unhealthy appearance; sleep is prevented at night by the pain.

The patient was placed under the treatment ordinarily adopted in such cases; the limb was bandaged from the toes, and was placed upon a splint, and perfect rest was enjoined. Under this treatment the patient experienced relief from pain, but permanent benefit did not result; the patient continued in her weak state of health, and became most anxious to have some operation performed, but refused to undergo amputation. It was therefore determined upon to perform excision.

Saturday, April 2, 1853, 2 p.m.—Excision of the knee-joint was performed by Mr. Fergusson. He did not remove any of the skin, as in the instance next related; but more of the femur was taken away, in consequence of the periosteum being stripped off from the bone for some inches. There was a considerable amount of disease in the joint; the the cartilages had entirely disappeared, and it contained a quantity of cheesy strumous material. The head of the tibia was more implicated than any other portion. There was only slight bleeding during the operation. The wound was united by sutures; wet lint was placed over

it, and the limb was enclosed in a proper apparatus, and suspended on the swing splint; and the patient was ordered half a drachm of laudanum.

3rd. Has had much pain and starting in the limb at night; pulse 160; had only slept one hour.

[Up to the 5th she took beef-tea and brandy every few hours. On the 7th she fainted, and on the 8th looked pale and coughed much. On the 11th the tongue became brown and dry. Pulse 130, and countenance anxious. On the 17th much worse; a severe rigor set in, and all the symptoms of purulent absorption were manifest, and she died on the 18th, evidently from purulent infection.

Unfortunate, however, as has been the result in London, in other parts the operation has been much more successful. Mr. Jones of Jersey, and Dr. Mackenzie of Edinburgh, have given it a fair trial. The former gentleman has operated five times, four of which were successful. Mr. Smith observes]

It is to Mr. Jones, of Jersey, most undoubtedly, that the Profession is chiefly indebted for having furnished the most numerous, most important and most satisfactory data respecting this operation. While I am writing this, I have received another communication from this gentleman, containing the details of a sixth instance in which he has excised the knee-joint. It may, with truth, be affirmed, that in all his cases, six in number, he has succeeded,—for dysentery, not the surgeon, destroyed the only one of his patients who is now in her grave. It is useless to attempt concealing the fact, that she did die of this disease, and not of anything else. Mr. Jones, in a letter to me states, that everything connected with the operation was progressing most satisfactorily, and that "scores of persons died in the neighbourhood" of dysentery.

According to Dr. Mackenzie, there are two other authenticated cases in which this operation has been performed with success within the last two years,—one by Dr. Stewart, of Belfast, the other by Mr. Page, of Carlisle; so that, in fact, the entire number of operations of excision of the knee-joint has been thirteen since the proceeding was first revived by Mr. Fergusson; of these three have turned out badly, the remaining ten are alive; and if we take away Mr. Jones's single unsuccessful case, we have only two fairly attributable to the interference of the surgeon,—a proportion of deaths by no means great when compared with ordinary amputation through the thigh. There is still one point of great importance, in reference to this particular operation, which is to be considered, —viz., the utility of the limb as a means of progression after the joint has been excised, and a cure has been effected. The evidence on this subject, so far as it can be obtained at present, is on the one hand of a a nature highly satisfactory, while on the other it is the reverse. In the remarkable case where Park first operated so successfully, the man returned to his occupation of a sailor, and "was enabled to go aloft with considerable agility, and to perform all the duties of a seaman;" surely this is more than could be reasonably expected. Mr. Jones wrote to me some time ago as follows concerning one of his cases:—"He walked without the assistance of crutch, stick, or any appliance whatever to the limb, up and down the largest room in the hospital, quite as fast as

I could." On the other hand, Mr. Syme's patient did not, I believe, have much use of his limb eventually. Although the exact particulars of the condition and aptitude of the member have not lately been obtained, there is reason, however, to believe, that it is not satisfactory, as Mr. Syme has evinced great opposition to the operation.

However, there is no doubt that strong union of the parts in the site of operation does take place, and that, by careful attention to position, a very useful substitute for a sound limb may be effected. In some instances the union is only ligamentous, but in others it is bony, as was the case in Sir Philip Crampton's patient.

Here, however, the limb was not of very much use; and any gentleman who will take the trouble to walk into the pathological department of the Hunterian Museum, and examine the large glass case on the basement floor, will at once see the reason of this; for he will there find the preparation of the parts, and will observe, that the divided bones had become joined by strong bony anchylosis, almost exactly at right angles. Sir Philip Crampton informed a friend of mine, that the limb had not been kept steadily in the extended position after the operation; thus arose the awkward anchylosis. But this case, instead of proving anything against the operation, speaks much for it, as the parts are firmly knit together by bony junction. And doubtless this union might have been effected in a straight position.

In concluding these observations on the cases above detailed, I cannot avoid expressing my conviction, that excision of the knee-joint, as a substitute for amputation, may worthily occupy the attention of surgeons; and I doubt not that the merits of the operation will in time be fairly tested, as such enterprising men as Mr. Fergusson, Mr. Jones of Jersey, and Dr. Richard Mackenzie, have taken the subject up. We can hardly expect to meet with such success as obtains in the proceeding on the elbow-joint; but there is not any reason why the excision of the knee-joint should not prove to be less fatal than the amputation through the thigh, in which procedure large nerves and vessels are divided, and a considerable portion is suddenly taken away from the rest of the body. If time proves such to be the case, and if, also, it be found that the limb is as useful to the patient as an artificial leg, surgeons will feel bound to adopt the operation. If, on the contrary, a greater mortality attends the removal of the joint than the amputation, and if the limb which is preserved becomes inferior to an artificial substitute, they will be bound to reject it altogether. The experience which has been obtained within the last two years, inclines to the belief, that it may ultimately be an operation recognised among surgeons.—*Med. Times and Gazette, Aug.* 27, *p.* 213.

67.—CASE OF EXCISION OF THE KNEE-JOINT.

By George M. Jones, Esq., Surgeon to the Jersey Hospital.

[Mr. Jones is induced to publish the particulars of this case, owing to the conflict of Medical opinion as to the merits of the operation, and because the operation was performed after a different manner to that com-

monly adopted. The patient, in the case, was a boy aged 12. He was admitted on the 12th October last, on account of a disease in the knee, of a year's standing. There had been inflammation, followed, it was suspected, by extensive ulceration of the cartilages. All the usual means tried to preserve the joint failed, and it was, therefore, determined to excise the joint.]

The operation was performed on the 17th of April last. A longitudinal incision was made on each side of the knee-joint, midway between the vasti and flexors of the leg, full five inches in extent; rather more than half the length was over the femur, and rather less than half over the tibia. These two cuts were down to the bones; they were connected by a transverse one just over the prominence of the tubercle of the tibia, care being taken to avoid cutting the ligamentum patellæ by this incision; the flap thus defined was reflected upwards, the patella, its ligament, and the joint, thereby exposed. The synovial capsule was cut through as far as it could be seen; the patella and its ligament were now drawn over the internal condyle, while the joint was kept extended. It was next forcibly flexed, the crucial ligaments, almost breaking in the act, only required a slight touch of the knife to divide them completely; the articular surfaces of both bones were thus completely brought to view, and nearly two inches of the femur and half an inch of the tibia were sawn off, the soft parts being drawn aside by assistants. The external condyle of the femur was found hollowed out by a large abscess, and it was necessary to saw off a portion of the carious bone, and to gouge the the remainder, until healthy cancellous tissue was reached. The entire synovial membrane was in a state of pulpy degeneration, and was carefully dissected off. The hemorrhage had been rather great, but had now almost ceased, and no vessel required deligation. The blood was sponged out of the wound, the patella (after the diseased portion had been gouged out) and its ligament was replaced, as nearly as possible, in their natural state, the bones brought in apposition, the flap brought down and held by sutures, the limb bandaged on a slight under-splint and laid in a box, the wound covered with moist lint, and the boy put to bed yet asleep. The operation occupied full twenty minutes, and was performed while the patient was under the influence of chloroform.

Opiates had, for some time, to be freely administered every night; and the boy's appetite, always excessively small, having entirely failed, the stimulating plan of treatment was followed out more rigorously than I had pursued it in other cases. The seventh day after the operation, a slough of some extent was perceived on the lower part and sides of the flap. This went on increasing for some days; the ligamentum patellæ was, however, never bared. Mild, stimulating applications arrested its progress; healthy granulations sprang up; and soon the suppuration, which was at one time very considerable, lessened in quantity. At present it amounts to a mere nothing, the wounds being now all but healed.

Not seven weeks have yet elapsed since this operation was performed, and it is most satisfactory to witness its favourable and rapid progress. The little patient never experiences the slightest pain in any part of the limb; he turns it from side to side easily and quickly, and, without

either assistance or appliance of any kind, can, while lying on his back, raise the leg from the hip upwards. The knee bows slightly inwards; but my previous experience in these cases leads me to believe, that a very slight mechanical contrivance will entirely remedy this. The patella is adhesive to the femur and tibia, and its ligament preserves its integrity.

The integuments covering the joint had been so much deteriorated by the disease itself, and perhaps also by the remedies used, as, together with the length of the flap, to account naturally for the slough. Probably two smaller flaps, reflected upwards and downwards from the centre of the patella, might have answered better.

I am very unwilling to be supposed to recommend this plan of operation, as one adapted to all cases of knee excision,—very far from it; there are cases in which it is altogether inadmissible; and I feel persuaded, that, whoever adheres to one mode only, will often find himself wofully disappointed in the result. The general rule of acting according to the features the case presents, is quite as applicable to these particular cases as to others generally.

Preserving the patella, and not dividing its ligament, makes the operation more tedious and difficult; but this is a very secondary consideration, where it results in obtaining a more favourable issue. That it proved so in this instance is abundantly established by the fact already mentioned, that, in less than seven weeks after the operation, this patient is able to raise his foot without any assistance; while a young man who occupies the next bed, and in whose case everything has gone on favourably, was only able to do so in as many months.—*Med. Times and Gazette, July* 2, 1853, *p.* 11.

68.—PRACTICAL OBSERVATIONS ON AMPUTATION AT THE TARSO-METATARSAL ARTICULATIONS.

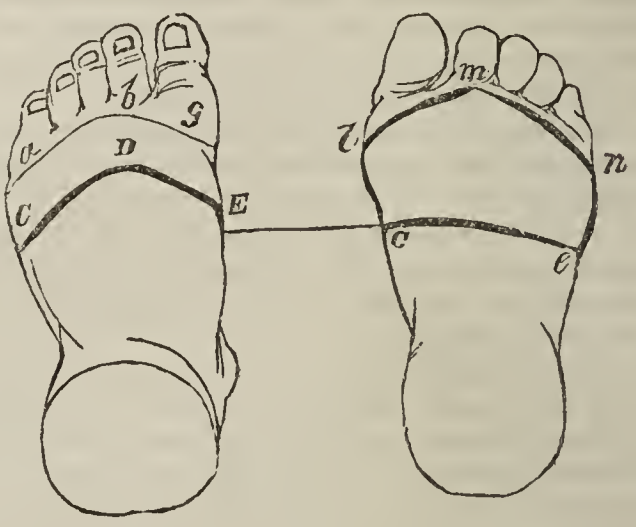
By Dr. Charles Edwards, Cheltenham.

Supposing the single or double flap formation at the option of the operator, in order, first, to get the line of cicatrix near the upper margin of the stump, and secondly, to avoid the painful and unnecessary dissecting-up of an anterior flap, I think it best to make but one flap—a plantar one.

To reach the line of articulations, and have a precisely adapted flap, ink the following lines:—First, a line near the roots of the toes, *a, b, g,* close by their commissures. Precisely parallel with this dotted guidance-line draw another arched line, commencing at the projection of the fifth metatarsal bone, or an eighth of an inch below it. This parallelism will prove an equal, if not superior guide to the articulation between the first metatarsal and internal cuneiform than any conjectural measurement from the projection of the navicular, which itself, in certain diseased states, is not easily felt. This arched line will be the course for the dorsal incision; the structures *retracted,* not *reflected,* will correspond to the joints.

Unite across the plantar surface the cornua of this irregular arc by a right line: this chord, *e*, *g*, will be the base-line of the plantar flap to which the knife should be fully carried.

It now only remains to mark its periphery, which will be determined by inking, if thought necessary, another arched line on the plantar surface, precisely bounding the roots of the toes, *l*, *m*, *n*, (as *a*, *b*, *g*, on the dorsal surface).



a, *b*, *g*, commissure guidance-line; *C*, *D*, *E*, line of dorsal incision. *l*, *m*, *n*, periphery of plantar-flap; *c g*, base line of ditto.

Having thus accurately defined the measurements, I would conclude with a few observations on the plantar flap, the dorsal incision, and finally the management of the second metatarsal bone.

As to the plantar flap, commence with a strong scalpel at, or slightly beyond, either extremity of base-line, and deeply groove out the whole circuit of the flap from without, carrying your incision round by the plantar arched line till it meet correspondingly the other extremity of base-line. Finish this flap, not with a scalpel or bistoury, but with a small, straight-edged amputating-knife, one stroke of which will smoothly reach the base by reason of its greater breadth. Thus, in addition to a more perfect outline of the flap than can be obtained *from within* after the disarticulation, by cutting *from without* no tendons are left projecting to be clipped. Some authors say, "Keep close to the metatarsal bones." If, however, you have, and leave too much muscle in this plantar flap, you will incur difficulty in bending it up over the stump, and much pressure and many sutures to keep it there: I speak to operators on the *living* body.

Secondly, as to the dorsal incision, see that the assistant who has charge of the arterial pressure presses perpendicularly to the surface, and does not disturb the parallelism, while the dorsal incision is being made, by unequal or, indeed, any tegumentary retraction.

Finally, with respect to the disarticulation, when from disease you cannot save the head of the first metatarsal bone, or leave behind that

of the second with impunity, I have in an instant disarticulated the latter, without previously removing any projection of the first cuneiform, by the following method:—The plantar flap being formed as directed, and the union of its base extremity and the corner of dorsal incision clearly made, disarticulate the first metatarsal, then press the metatarsus, not downwards, but rather directly outwards, (this manipulation admits of easier demonstration than description.) The point of a scalpel, applied laterally, by a person knowing where to expect the articulation, will most readily penetrate it, and so the chief difficulty of the whole operation will be readily overcome by any dexterous hand.—*Lancet, April* 30, 1853, *p.* 405.

69.—PURULENT INFECTION, AND ITS EFFECTS ON JOINTS.

[In a paper read before the Medical Society of London, Mr. Bullock divided the subject into the following heads: 1st, secondary affections, not fatal; 2nd, those proving fatal; 3rd, the pathology and treatment. The first head was subdivided into—secondary affections following certain diseases, and those after operations. Examples of the former of these are mild cases of puerperal fever and gonorrhœal rheumatism.]

The following case was related in illustration:—A man, aged thirty, had been the subject of gonorrhœal discharge for some months, when he was seized with pain in his right elbow and left wrist; ulceration of the cartilages subsequently took place; in six months he recovered with partial anchylosis of the joints, and was then free from discharge. Here was a case of joint affection, of a severe kind, following a purulent discharge from the urethra; here apparently there was no inflammation of veins; here was no introduction of pus into veins, and yet it bore a strong analogy to cases where one or other was supposed to have been the case. What, then, was to be the explanation of the secondary inflammation in this case. It could not have been merely a coincidence, for gonorrhœal rheumatism was of no very uncommon occurrence, and this appeared but an aggravated form of it. He (Mr. Bullock) had been told by Mr. Lane that he had often seen an attack of rheumatism follow a collection of matter in a part which the patient had refused to have evacuated; and he had himself often noticed that patients suffering from phagedænic and sloughing sores had suffered severe pain in their joints. He would endeavour to explain the pathology in this way: that there were certain changes going on in the mucous membrane of the urethra, resulting in the secretion of pus. From some cause or other this process of secretion was interfered with; the fibrin, which was about to be formed into pus-globules, underwent a retrograde metamorphosis, and was carried on in the circulation, and consequently caused like actions to go on in the accompanying fluid. This resulted in an effort to get rid of the morbid and contaminating material which was endeavoured to be done by some secreting organ, which either from its structure or function, or some other cause, was predisposed to take on morbid action. Among secondary affections following operations, and not fatal in their

results, might be mentioned ulceration of the cartilages of joints, chorea, serous effusions, syncope, vomiting, and rigors. In illustration the the following cases were read:—A man aged forty-six, the subject of a severe stricture of twelve years' duration, had No. 2 gum-elastic catheter passed and retained twenty-four hours, which was followed by ulceration of the cartilages of the shoulder-joint, and the formation of abscesses in its neighbourhood. A girl, aged 9, was operated on for the necrosis of the tibia. The operation was followed by phagedæna of the wound, and chorea. A man, aged 42, had Holt's dilator used for stricture of the urethra; it was followed by shivering and effusion into the sheaths of the tendons on the dorsum of his hand. The first and last of these three were cases of synovial inflammation following the introduction of instruments along the urethra into the bladder. Here, as in the former cases, was inflammation set up in a distant part, of the same character, after injury to the urethra, where there was a secretion of pus; here the same explanation as before might be given, the constitutional symptoms and long continuance of the affection clearly showing that there was a blood-poison operating and keeping up the action. The other was a case of extreme interest—viz., chorea co-existing with phagedænic ulceration of an incised wound; in this case the amount of morbid material was probably small, and exerted its influence on the nervous system, and was finally eliminated by the natural emunctories of the body. Of secondary affections followed by fatal results might be mentioned—puerperal fever, purulent depositions in various parts, pericarditis, pleurisy, peritonitis, &c.; and in all the cases the author had seen, there was a marked rapidity of supervention of fatal symptoms, and from the first but small hope of recovery. How great, then, would be the boon could some conclusion be arrived at as to the *modus operandi* of the exciting cause of this disease. The following cases were then related:—A man, aged sixty-nine, had the operation of lithotomy performed; the second crushing was followed by purulent deposit in both knee-joints, and death on the fourth day. The post-mortem examination showed coagula in, and a slight thickening of, the prostatic plexus of veins; the iliac veins stained, and the venous system generally gorged with blood; ulceration of the cartilages of both knee-joints, and injection of the synovial membrane of both hips.—A man, aged thirty-eight, was operated on for stone by lithotomy. On the seventh day he had secondary hemorrhage from a large vessel which had been wounded and tied during the operation; this was followed by inflammation of the right arm, great constitutional disturbance, and death on the fourth day from the occurrence of the hemorrhage. At the post-mortem examination, the cellular tissue from the wound to behind the rectum was found infiltrated with pus, and a circumscribed abscess in the levator ani muscle; the cellular tissue of the right arm and forearm saturated with sero-purulent fluid.—A man, aged thirty-four, had the operation of perineal section performed for stricture of the urethra; it was followed, on the next day, by rigors, and subsequently by pericarditis and pleurisy, and death on the tenth day. Post-mortem examination showed recent pleurisy, adherent pericardium, purulent deposit in the lungs, and deposits under the capsules of the kidneys; sub-arachnoid effusion, small coagula in, and slight

thickening of the prostatic veins, the remainder healthy.—A woman, aged forty-two, was operated on for ruptured perineum. She had sloughing of the wounds, and died of pleurisy and peritonitis. The uterus was found enlarged and inflamed, and pus oozed from the Fallopian tubes; there was recent peritonitis and pleurisy. Large quantities of opium were given in this case after the operation.—A boy, aged sixteen, had chorea following an opening made in the urethra through the perineum, of which he died. The autopsy revealed an abscess between the rectum and bladder, and another behind the pubis, and exposed bone and fibrinous vegetations on the mitral valve.—A boy, aged twelve, was seized, four days after a blow on his left leg, with pericarditis, pleurisy, and pneumonia, and died in less than forty-eight hours. The post-mortem examination showed purulent deposits in the right lung; in the substance of the left ventricle of the heart and in the kidneys recent pleurisy and pericarditis; pus under the periosteum of the tibia and femur.—A woman, aged forty-six, had an abscess in the palm of her right hand, following a wound with a rusty nail. It was opened, but matter subsequently formed at the back of the hand; this was let out by incision, but the patient died of secondary deposits in her knees. No inflamed veins were detected.—The last set of cases were interesting from the variety of causes producing the affection, and the number of different parts affected with purulent deposition; their inamenability to any kind of treatment. There was also to be noticed the small amount of pain felt by the patient, even when an important organ was affected. Could it be the extreme rapidity with which the vessels were relieved by secretion, thereby lessening the amount of distention of parts, and consequent pressure on nerves.

Pathology and Treatment.—By nearly all writers on the subject Mr. Bullock said the greatest prominence had been given to phlebitis, which had been unhesitatingly given as the primary cause of the affection; more difference of opinion had existed as to the mode in which the purulent depositions in various parts take place. Mr. H. Lee had been the first to throw any doubt on the importance of phlebitis as the primary cause of the disease, but rather considered it (the phlebitis) to be caused by the irritation of morbid material introduced into the veins. It appeared to the author that, taking into consideration that there are cases of undoubted "purulent infection" in which there is little or no evidence of inflamed veins; we must look further for the cause of this disease, though it must be acknowledged that phlebitis was a very frequent accompaniment of it and was caused by it; and moreover he thought there was no doubt that the poisonous matter which lights up the disease circulated in the veins, and consequently might be an exciting cause of inflammation, but that inflammation of the veins might be only a portion of the general inflammation existing in the part first affected, it being propagated along them to a distance by their continuity of structure. He took the same view of this disease as of typhus or cholera, or any other disease of that kind: that as these were the result of a poisonous matter circulating in the blood, so was this. He was supported in this by the fact that puerperal fever acts very often as any other epidemic disease, and that it (purulent infection) was most

prevalent in hospitals and places where large collections of people were. He considered that the fibrin which was about to form pus in a wound or other part, from some cause, either atmospheric or local, did not do so, but it was carried on in the circulation and underwent a retrograde metamorphosis; that on reaching some secreting organ there was a tendency to throw off the morbid material; the unhealthy fibrin then took on a progressive metamorphosis, and underwent that degree of development it was about to do originally, and so formed pus ; that in the case of joints it was shown by Dr. Alderson, in his Lumleian Lectures for 1853, that the structure and distribution of the bloodvessels were peculiar, there being a firm and unyielding tissue, which, when the bloodvessels, excited by morbid material circulating in them, became distended, a certain degree of stagnation took place ; then was the time for changes to take place, there being already a tendency to form pus ; it was done there. In proof of the theory, the small quantity of pus introduced into the veins, and the extent and magnitude of the symptoms produced, were to be looked at ; that there must be some process of development going on in order that the morbid material might be distributed all over the vast area of the circulation. The treatment then must be directed to interrupt and destroy the process of morbid development which was taking place, and to check undue action in those parts in which it had unhappily taken place, and to evacuate pus if possible as soon as formed.—*Lancet, May* 28, 1853, *p.* 501.

70.—ON ANCHYLOSIS.

From a Paper headed "Berlin,—Its Medical Institutions, &c.," By Dr. William Hales Hingston.

[In *true* Anchylosis there is no motion whatever, the bones having grown together; but in *false,* the motion is diminished but not destroyed. Cooper remarks, "No attempt should be made to *cure,* though every possible means should be taken to *prevent* a true anchylosis." Dr. Hingston observes,—]

With such authority before us, and the authority of many more I might quote, it would require no small amount of courage to interfere with what has been designated "a favourable termination," "a desirable termination;" and a surgeon who would undo this wise provision of nature, might be pronounced reckless and bold. I confess that such would have been my own opinion had I read, and not seen, the treatment—the successful treatment, of *true,* and in many cases long standing, anchylosis, by breaking up the callus. This mode of practice is not novel. It was tried many years ago in France, but the result of these experiments was such as to discourage others from repeating them. Violent inflammation of the joint, and the most disagreeable consequences, generally followed; and the patient was left in a worse condition than previous to those experiments. But the French erred greatly.

Instead of breaking up the callus gradually and cautiously, they restored the perfect flexion and extension of the limb immediately, and then kept up the motion of the joint, in order to free the condyles from their abnormal adhesions. As already remarked, the consequences were frequently very serious. The majority of surgeons would not follow the example, and writers on surgery only mentioned this mode of treatment in order to caution the profession against adopting it.

The practice so successful under Langenbeck, and which has given rise to those remarks, consists in breaking up the callus certainly, but in a manner very different to that employed by Louvrier. The patient is placed upon his back, and chloroform administered until complete anæsthesia is induced; until, in fact, *the muscles cease to offer any resistance.* If the anchylosis be of the knee, (the most favourable joint for the operation) an assistant, or assistants, fix the pelvis, and the surgeon commences gradual flexion, if the joint be in an extended state, or extension if in a flexed state. The force to be employed must be regulated by the surgeon himself. In cases of many years' standing, the force required, as might be supposed, is considerable; sometimes the whole weight of the body is necessary, but it must always be applied with care. When the callus yields to the external force, the amount of flexion is preserved until the next trial, the limb being exercised, passively, during the interval. A great degree of flexion is not to be desired at once; and the more cautiously and patiently the limb is managed, the less danger of violent re-action, and the greater probability of success.

Indeed, this constitutes the great difference between the treatment of Louvrier and that of Langenbeck, or between failure and success. When managed with due care, the inflammation set up is very trifling, indeed seldom sufficient to retard the cure. Frequently no reaction is perceptible. Every two or three days the patient is again subjected to the same treatment. Sometimes a couple of months are necessary to restore the function of the joint perfectly, but three or four weeks are frequently sufficient. Although many years may have elapsed between the occurrence of the anchylosis and the attempt at restoration, yet in most cases the callus may be broken up, and the integrity of the joint restored. It is absolutely requisite, however, that the patient should exhibit no tendency to scrofula, and this the more especially if the anchylosis be the result of scrofulous inflammation or ulceration.

From the want of exercise of the joint, the limb is usually much smaller than the sound one. Sometimes almost total atrophy of the muscles is the consequence, but a short time suffices to restore them to their original volume. In concluding these remarks, I feel perfectly justified in supporting the claims this mode of treatment has to be admitted among the regular operations of surgery. And as anchylosis, as a result of disease of, or injury to the joint, is unfortunately of frequent occurrence, any mode of alleviating the subjects of it should obtain a fair trial, especially when supported by experiments.—*Glasgow Medical Journal, July* 1853, *p.* 178.

71.—ON THE TREATMENT OF CONTRACTIONS AND ANCHYLOSIS OF THE KNEE AND HIP JOINTS, BY FORCED RUPTURE.

By Dr. Philip Frank, Manchester.

[After making some general remarks, Dr. Frank describes the method practised by Mr. Langenbeck, since 1847, the knee-joint being the one supposed to be affected.]

The patient is placed on his back, and put under the full influence of chloroform: as soon as the muscles become entirely relaxed, the patient is turned round on his belly; an assistant holds the head in a raised position, to prevent respiration being impeded, and to facilitate the further inhalation of chloroform, if necessary. The patient must be so placed, that the patella of the bent knee rests on the anterior margin of the operating table. The pelvis is fixed by the hands of assistants. The operator then clasps with one hand the femur just above the popliteal fossa; with the other, the leg, just above the ankle, and by alternate flexion and extension, practised with more or less power, according to the nature of the case, restores the mobility and the normal position of the joint. A loud crepitus attends the rupture of the adhesions. Should the strength of one hand of the operator prove insufficient, the femur is held down by an assistant. The operator clasps the leg with both hands, and produces, either by strong gradual pressure, or by sudden jerking movements, the rupture of the more powerful impediment. Even firm osseous bridges are thus made to yield with a loud snapping sound. This was once, in a case of undoubted osseous anchylosis, so loud as to cause the mother of the patient, who was sitting in an adjoining room, to swoon. If, in course of the operation, the tibia threatens to luxate backwards, and particularly, as is often the case, a consecutive subluxation is already present, especial care must be taken to support the joint by pressure on the posterior surface of the upper end of the tibia. Still, luxation is often unavoidable, its mechanism depending on pathological conditions of the part, which art is unable to change. We refer to those cases where, in consequence of large defects of the inferior and posterior surfaces of the condyles of the femur, consecutive subluxation has supervened during the course of the inflammatory disease. A perfect luxation is in these cases more probable during the violent forced extension, if the patella is so firmly anchylosed with the femur as to present an invincible impediment to the pressure of the anterior surface of the tibia against its inferior margin. The tibia is often compelled to describe a circular motion backwards, the centre of which is situated there, where tibia and patella come into mutual contact.

These luxations of the tibia backwards form complications the more unpleasant, because the conditions under which they originated are the same that form serious impediments to the re-position; and if the re-position were to succeed, to maintain it. It is not possible to lay down any rule whether the joint is to be extended at the first attempt, or whether this is to be effected by repeated operations. Alarming tension of the skin, which, after long suppurating disease of the joint is often firmly attached by cicatrices to the parts beneath, renders it judicious,

at the first attempt, to effect only a certain degree of extension. If we have reason to believe that the osseous epiphyses are diseased, and if the resistance during the extension is of any magnitude, considerable caution is called for, as fractures are to be apprehended. Here, also, it would be more judicious to effect perfect extension by repeated operations. According to the practice of Mr. Langenbeck, carious and necrotic processes in the epiphysis need not deter from practising forced extension in a cautious manner. In young individuals this is a matter of the highest importance; for, during the long space of time too often necessary to the cure of these processes, atrophy of the extremity can ensue, thus causing disproportion of the limbs. Add to this, the contraction can increase, and that the longer the abnormal position of the joint is maintained, the more serious and considerable alterations of the parts may supervene. Nor does the alteration of the abnormal position of the joint appear to be devoid of influence in effecting a more rapid cure of these processes. This favourable influence can, with some certainty, be expected, where ulcerative processes supervene on those parts of the epiphysis which, by the abnormal position of the joint, are exposed to an undue degree of pressure. The tibia, in cases of contractions of the knee-joint, being generally more or less in a state of abduction, the external condyles of the tibia and femur are thus exposed to a strong mutual pressure, carious processes in either one or the other are frequently the result, and in these cases the beneficial results of meliorating the false position are most obvious. A short time since we saw a case in the private practice of Mr. Langenbeck, where, in addition to a contraction and spurious anchylosis of the knee-joint, there was a large abscess in the external condyle of the tibia. This disease of the bone had persisted a long space of time, in spite of every treatment; but the joint having been stretched without any evil consequences, a remarkable melioration rapidly took place.

But extreme caution is necessary in cases of central necrosis, so often found to extend from the inferior part of the diaphysis to the epiphysis of the tibia or femur, and often communicating with the cavity of the joint itself. The only case among 150 of anchylosis treated by Mr. Langenbeck by forced rupture which terminated fatally, was a case of this kind. We shall afterwards speak of this case at large.

In our dissertation on contractions and anchyloses, we have expressed our full approbation of the opinion first promulgated by Bonnet,—viz., that it is not only justifiable, but even strictly indicated, to stretch a contracted joint, although inflammatory symptoms may still exist. The theoretical presumptions by which this practice is vindicated are too well known to the Profession to need any further discussion. It is a practice which has been crowned with the most eminent success, as all those conversant with the works of Bonnet are aware of. A most brilliant case of this kind, which occurred in the practice of Mr. Langenbeck, is subsequently related, which will testify more forcibly in favour of the the proposition we advance than the most eloquent arguments. This practice is, of course, contra-indicated if the organism of the patient is in an advanced state of debility, where a dangerous and local re-action might be apprehended. According to the experience of Mr. Langen-

beck, a still existing chronic-arthritic process can alone be regarded as an absolute contra-indication. If this process has terminated, contractions of the joint can be successfully treated by forced extension. The deep alterations known to be produced on the articular surfaces by the chronic-arthritic processes do not permit us to expect the restoration of the normal functions of the joint.

It will be no matter of surprise, that forced extension being practiced under the precautions enumerated, we have no account to give of serious accidents having supervened during the operation. The skin was never ruptured. Only in one case superficial excoriations were observed in the popliteal fossa. We never saw the popliteal artery ruptured as it was by the machine of Louvrier, nor was ever one of the large nerves lacerated. Only once after forced extension of an anchylosis at an acute angle, anæsthesia supervened in that part of the skin supplied by the saphenus major nerve. In a short time, however, the normal sensibility returned. Nothing more serious than a distension of the nerve can therefore be surmised. Where a subluxation of tibia backwards existed before the operation, it of course became more evident after extension had been performed. Only in two cases, one of which occurred in the Royal Surgical Clinic, the other in the private practice of Mr. Langenbeck, the luxation was rendered perfect. In both of these cases, it was impossible to detach the anchylosed patella from the external condyle of the femur. All the injuries produced by the operation being subcutaneous, the re-action after a proceeding apparently so dangerous, never attained a serious character. Of constitutional symptoms nothing but a slight febrile irritation is on record.

As far as local action is concerned, in most cases nothing but a superficial reddening was observed. In some cases a slight inflammatory infiltration of the parts surrounding the joint took place; in others, small sugillations were noticed. A suppurative phlegmon was never remarked. These symptoms quickly yielded, in all cases, to the employment of cold applications. Violent pains in the distended muscle always followed the operation. In several cases pains increasing on pressure were complained of on the anterior surface of the epiphysis of the tibia. We do not hesitate to ascribe these to violent contusions to which the part is exposed in attempting to detach the anchylosed patella. They were most marked in those cases where this detachment was attended with the greatest difficulties.

The after treatment is based on two indications: the first, to preserve the degree of extension obtained; the second, to endeavour to restore the normal functions of the joint. After forced extension has been practised, the muscles have a decided tendency to return to their former condition. We have seen, that muscles which have been contracted during a space of ten years, are not exempt from this tendency,—a fact which sufficiently refutes the opinions of those who assert that muscles under prolonged contraction utterly loose their vitality. Pathological anatomy teaches us the comparative rarity of total degeneration of the muscular fibre. It is worthy of remark, that, in a few cases of recent date, where we cannot admit of a total degeneration having ensued, the tendency to recontraction was very inconsiderable; so that a pasteboard

splint, fastened by a common roller in the fossa poplitea, was sufficient to maintain the extension. In most cases, this is not sufficient, and we have then either to have recourse to a bandage of gutta percha, or, to what is better still, Stromeyer's apparatus for the extension of the knee-joint,—an apparatus which, in the further treatment, is as indispensable as it is efficacious. Sometimes the machine, which must always be applied during the narcosis in the degree of extension obtained during the operation, is tolerated for several days, unattended with severe pain. In most cases it is not possible to maintain the perfect extension of the joint for any length of time after the operation. The violent pains, attended by spasmodic contractions; the acute sensibility of those parts of the articular surfaces, so long unaccustomed to mutual contact, usually compel us to relax the machine, in order to allow the joints to re-assume a greater or less degree of flexion.

The loosening of the knee-cap alone is often sufficient to afford relief. In some cases it was necessary entirely to remove the apparatus; the degree of flexion which existed before the operation then soon returns. In the course of twelve or twenty-four hours, the pain in the muscles and the joint generally subsides so as to allow the extension by means of the machine to be recommenced. If the first operation did not succeed in producing perfect extension, and if the still existing adhesions rendered its consummation by means of the gradual force of the machine impossible, Mr. Langenbeck is wont, after the lapse of two or three weeks, to repeat the forced extension by means of chloroform. By this second operation, the extension is usually rendered perfect. In some cases an obstinate recontraction of the muscles alone demands their repeated distension in the narcosis. The re-action, after this second operation, is generally less considerable than after the first. We have seen cases where the patient walked about with the machine free from pain two days afterwards. Where a subluxation of the tibia backwards existed, the apparatus of Bonnet for extension of the knee-joint was applied with obvious success. In the two cases where the luxation was perfect, and in others where it was very considerable, all attempts at reposition proved in vain.

Mr. Langenbeck has expressed it as his opinion, that the subcutaneous division of the two lateral ligaments might be of some service in these seemingly hopeless cases. Where a considerable degree of abduction prevailed, which, if existing together with the flexion of the tibia, always becomes more marked after the extension has been effected, an apparatus combining the mechanism of Stromeyer's machine for the extension of the knee-joint with that generally in use for the treatment of the genu vulgum, will be found of considerable service.

Should an evident contraction of the external lateral ligament be present, a subcutaneous division which we have several times seen practised with eminent success by Mr. Langenbeck, in the treatment of genu vulgum, is here advisable. In those cases where large defect in the articular surfaces of the external condyles of the tibia or femur exist, every treatment directed against the abduction will of course prove ineffectual. Those conversant with pathological anatomy will remember cases of this nature, where the external condyle of the femur rests in a

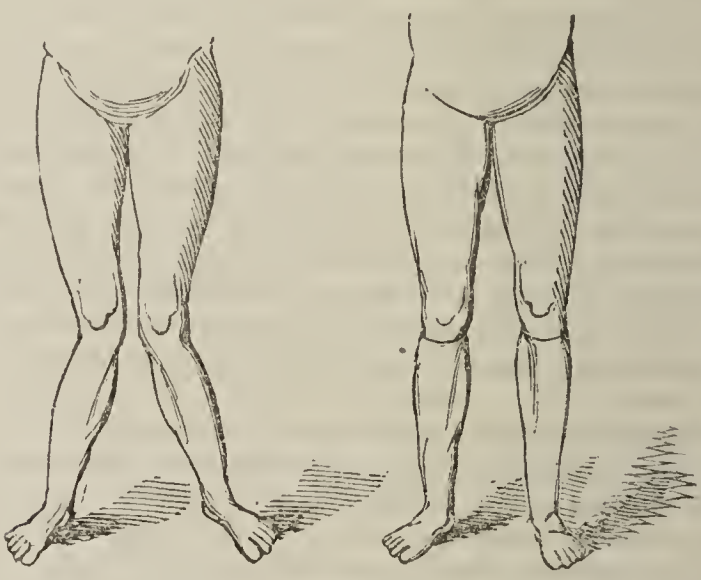
deep hollow of the caput tibiæ. A fortnight or three weeks after the operation,—often sooner,—the patients wearing the machine are able, with the assistance of a stick or crutch, to walk about the room, and after some time, without either, if there is no luxation of the tibia backwards, no defects of at the inferior and posterior parts of the condyli femoris, which will always favour the re-development of the muscular contraction; and if the extremity has not become too weakened by long disuse, the machine may also be omitted.—*Med. Times and Gazette, August* 6, 1853, *p.* 134.

72.—OPERATION FOR KNOCK-KNEES.

[In the proceedings of the Medical Society of Würzburg, Dr. Mayer, of the Orthopædic Hospital, reports the following case.]

John H—, a strong and healthy-looking boy of fifteen, son of a baker, and employed in his father's business, was found, on admission into the Orthopædic Hospital at Würzburg, to have the right leg diverging about seven inches, and the left about eight, from the direction of the corresponding thigh, as seen in the first figure of the accompanying sketch.

Fig. I. Fig. II.



On the 14th of August, 1851, the lad having been put under the influence of chloroform, Dr. Mayer made an incision beginning three-quarters of an inch below the insertion of the ligamentum patellæ, and curving downwards so as nearly to surround the front and inner (or mesial) side of the head of the tibia. He then turned the flap upwards, and divided the periosteum in the line of the first incision, and afterwards with Heine's cutting-needle, separated the periosteum from the outer and posterior surface of the tibia, so as to prepare for the use of the saw. To protect the soft parts in that situation during the sawing, a strip of watch-spring, about half an inch wide, was introduced between

the denuded bone and the periosteum. Dr. Mayer then, with a round saw, made two incisions converging towards the posterior part of the tibia, and meeting about a line and a half from the surface, without therefore quite cutting the bone in two. The wedge thus excised was about five lines thick at its base, and was easily removed by the forceps. The wound was cleared of bone-dust by forcible injections of cold water, after which, through the flexibility of the remaining isthmus of the tibia and the mobility of the fibula, no difficulty was found in bringing the cut surfaces of bone into close apposition. The outer wound was brought together with the greatest accuracy by needles and ligatures, (as for hare-lip), the hemorrhage being quite inconsiderable. The leg was then put into one of Boyer's hollow splints, used for fracture of the patella.

Half an hour after the operation. as, through the perfect apposition of the divided parts, no discharge of any kind was visible, the wound was covered with a thick layer of collodion, and upon this drying the ligatures and needles were removed. The traumatic reaction was very slight, and on the fourth day the external wound (five inches long) had perfectly united. The leg was now left quiet in the splint for twenty-three days, when Dr. Mayer had the pleasure of finding that the incised surfaces of bone had united also. The next day the patient was allowed to walk in his room with crutches, and a few days afterwards in the garden without any artificial support whatever.

On the 3rd of October the other leg was operated on in the same manner and with the same success. He left the hospital, free from deformity, and with a firm and natural gait, on the 19th of November.—*Lancet, June* 18, 1853, *p.* 557.

73.—ON DISEASES OF THE SPINE.

By Samuel Solly, Esq., F.R.S.

[The diseases to which Mr. Solly particularly alludes commence in the ligaments of the spine, either from cold or by direct injuries, as a blow or fall. The first case is from the notes of Mr. Brake. The patient had worked at a gas factory, and was admitted into St. Thomas's Hospital, Oct. 26, 1852.]

"Exposed much to heat and cold, but enjoyed good health till fourteen weeks ago. About that time, noticed a severe catching pain in the right loin, upon attempting to lift the iron scoop used in his employment; lasted about two days; was under treatment, and got better. Subsequently, the body became covered with a thick rash, with formication over the arms, trunk, and front of the legs, but without loss of power. Had diarrhœa and pain in the abdomen; was under treatment six weeks, and recovered. Returned to work on a Monday, but, not being strong enough to keep on, did not return again till the following Friday, but obliged to give up after two nights' work, on account of weakness. Remained at home for about a fortnight; at the expiration of that time, while walking, had a severe pain in the back just between the shoulders. The same night, this pain in the back continuing, he noticed a severe tingling in the left shoulder and along the side of the

arm and forearm, followed by numbness. Applied a mustard poultice to the back and forearm; found afterwards that he had very little use in the arm, and no relief from pain; was cupped, and applied a liniment, but without any beneficial result; also tried continuous poultices for a fortnight, without relief. Cannot rest upon the shoulder without pain and uneasiness."

The deduction which I make from this history is, that, in the first instance, this man was attacked with rheumatic inflammation of the ligaments of the lower cervical portion of the spine, extending from thence to the theca vertebralis, accompanied by some effusion on the cord. The severe catching pain in the right arm, on attempting to move his scoop, is not characteristic of simple rheumatic affection of the muscles. This pain is followed by a severe tingling down the arm. Now, I need only remind you of what takes place if you strike the ulna nerve, as it runs over the inner condyle of the humerus, or, in ordinary language, the funny-bone. The tingling is succeeded by numbness; in other words, the nerve, which was first only irritated, is now compressed and partially paralysed. I dare say that most of you know the sensation of numbness which results if you go to sleep in your chair, overdone by your nocturnal studies, with one leg crossed over the other. When you awake, you find your leg still asleep; it is numbed from the pressure of the popliteal nerve on one side by the knee of the other leg. But, to return to the case.

Oct. 28. Treatment: Hydr. iodidi gr. i. ter die.; moxa to side of spine.

Nov. 6. Mouth a little affected; pain and uneasiness less on lying on right side; still continues on the left shoulder. Pil. bis in die.

8th. Gums very tender. Pil. omitted.

17th. Much better. Only complains of numbness along forearm and two last fingers.

29th. All pain and uneasiness left him.

Dec. 4th. Cured.

If this man had not been actively treated, both before his admission by Mr. Else, who kindly sent the man up here, and had not this, too, been followed up, on his admission, by complete salivation, he would have had ultimately more advanced disease of the cord, and, in all probability, entire paralysis. Under the continued use of mercury, and steady counter-irritation, the deposit has been absorbed, and the poor fellow restored to health.

[Although in our large hospitals we frequently meet with cases in which the lower half is paralysed from fractured vertebræ from a fall from some great height, in which state the patient lingers rarely above some days, we do not often find in such institutions cases of slighter injury, perhaps little attended to, but which may be the first step to serious consequences in after life. Mr. Solly records an interesting case of this kind.]

The subject of it was a fine young man, about 23 years of age. About two years and a-half previous to his consulting me, (on the 4th of September, 1852,) he fell from a height of sixteen or seventeen feet, with his back flat on a hard gravel walk. He was stunned at the time,

though he did not strike his head directly. He received immediately the best advice, was bled from the arm, and leeched over the left hip. He was very sore, and had severe headaches for some days afterwards, and was not able to walk until seven or eight weeks had elapsed from the time of the injury. He was then examined by several medical men, and pronounced sound. After this, he went abroad, and lived rather freely. Just ten months before he consulted me, he began to suffer from involuntary seminal emissions, accompanied with great feeling of weakness in the back. About two months after these first appeared, he remembers finding a swelling on the left side of the loins; but this inconvenienced him so little, that he did not even mention it to his medical attendant, who treated him for dyspepsia, ordering him plenty of horse and pedestrian exercise, with tonics; but he continued to get worse, and was obliged to return to England. On his arrival, he applied to an eminent surgeon, who treated him for the spermatorrhœa with the caustic catheter. He remained under his treatment for two months, but without improvement, when his father brought him to me. From the history which I elicited, by a careful cross-examination, I came to the conclusion, that the spermatorrhœa had a spinal, not generative origin. On stripping him, I found an elongated swelling, about four inches in length, on the left side of the lumbar vertebræ. It did not fluctuate, but it was elastic.

On rapping the spine in this situation he suffered a distinct, though not severe thrilling pain, shooting from the spine down the legs, with some numbness. He now stated, that he occasionally suffered from the same kind of pain when walking or riding, and from the motion of a railway carriage. He also complained of a feeling of weakness in both legs, but more especially in the right. I was also informed, that he slightly dragged that leg in walking, and that he could not balance himself naturally. His countenance was anxious, and he looked out of health. The nocturnal emissions were occurring frequently, without erection or pleasurable sensations. I found spermatozoa in his urine, on examination under the microscope.

Putting all these facts together, I came to the conclusion, that the spine had been injured by the blow from his fall about two years and a-half previously. I was rather afraid, from the swelling in the mass of the erector spinæ muscles, that an abscess was forming in that situation, and that the disease was not limited to the ligaments. Nevertheless, I had great hopes that it was not so serious as that, inasmuch as he bore firm pressure and rapping on the spine too well for there to be much serious disease of the bones; but I had no doubt of there being chronic inflammation, with some deposit of the ligaments of the vertebræ, and also of the theca vertebralis.

With this view of the pathology of the case, I ordered him to be confined to the house, and almost entirely to the sofa, to have a large moxa made over the swelling, to take quinine, in doses of two grains ter in die, in the infusion of roses, with sulphate of magnesia. To remain quietly in the country; scarcely move off the sofa; on no account to ride, either on horseback or in any kind of carriage, railway, or otherwise; to have meat, but not to take any wine or beer.

On the 24th of September I changed this to the carbonate of iron in ten grain doses, with pil. aloes c. myrrh. at night.

On the 22nd of October, 1852, about six weeks from his consulting me, I received the following from his medical attendant in the country:

"I am glad to say the — V. T. is going on as favourably as when you saw him. The issue discharges well. He has not any numbness on tapping the spine, or any disagreeable sensation. He has had several seminal emissions, but they have been attended with natural feelings, and have not left him in the weak, nervous state as when they occurred some months ago. When I saw him yesterday, he complained of being weaker in the right leg than the left, but not in any pain."

From this date he gradually but steadily improved—the issue was healed on the 4th of December, and now (January, 1853) is quite restored to health; the swelling has been entirely absorbed, and on both sides the loins are exactly the same size and shape. The nocturnal emissions have ceased; the urine is free from spermatozoa.

Feb. 7. He has all the appearance of health, and, though still nervous about a relapse, he has no single sign indicating it.

He can bear any tapping on the spine from the top to the bottom. He has been out with his gun for several hours during the day, and feels no weakness or unnatural sensation in the lower extremities.

The result of this case is highly satisfactory, and it must encourage you to pursue a similar plan of treatment in a case in which the pathology is similar; for I do not exaggerate when I say, that, if this disease had been further neglected, it must have terminated in complete paralysis of the lower extremities.

You must not confound this class of cases with another, and that of a wholly different origin, and in which the pathological condition is likewise different. I refer to a form of paraplegia, which comes on so insidiously that the sad victim of it is almost lost before he is aware that his health is seriously deranged. The disease is unaccompanied with pain, and as it generally occurs to those whose attention is so drawn from themselves by active mental exertion that they often pay no attention to the first symptoms of disease, regarding them as trivial and unimportant. The cases we have just been analysing had both an inflammatory origin; the cases to which I now direct your attention, are, I believe, anæmic from the first; they are cases of permanent spinal exhaustion, and you will see, therefore, the importance of a correct diagnosis, as the treatment which, in the one case, would cure your patient, in the other, would aggravate his malady.

The disease commences with slight numbness of the lower extremities; this is followed by some loss of power; there is no pain in the spinal region at all; when you examine them, you may rap the spine, from the neck to the rump, and the patient does not shrink. You may apply the hot sponge, but this elicits no evidence of disease of the vertebral column.

The history will assist you if you strike the right key. You find no evidence of your patient having ever received any injury to the spine. He cannot account for it at all. If, however, you ask him, whether he has had much sexual intercourse, he will say, if he is honest, yes; but

more probably he will not acknowledge to it immediately, but when you tax him directly with not having been satisfied with the caresses and charms of one syren, but that two claimed him for their own, and that his animal pride would not allow him to stint them, he will generally acknowledge to the truth of the soft impeachment. If, on the other hand, he says indignantly, that he never had connexion with a woman in his life, it is almost certain that he is the victim of that dread delusion—masturbation.

In the treatment of these cases you must avoid all antiphlogistic measures, for they only do harm. The first thing is to stop the exciting cause, and this is often, strange as it may seem, the most difficult part of your task.

I have known men of sound sense on all other matters, men whose judgment is of the greatest value to their clients, such slaves to the venereal appetite and their own ideas of pleasure, that they would submit to any plan of treatment that you like to propose, yet would not abstain from copulation, or give up their ordinary exercise and mental employment. I remember once saying to a patient, who consulted me for this malady, and whom I found perfectly deaf to all my advice on this point, "The best thing that could happen to you would be to be pitched out of your phaeton, and to have a bad compound fracture of the leg, which would confine you to your bed and your back for at least two months." Now, it did so happen, that this gentleman met with an accident, though unfortunately for him not so serious as to confine him for more than a month or six weeks; but even this did him so much good, and he rose so much better, that he forgot all his good resolutions, pursued the same course again, and is now perfectly, and I fear irrecoverably, paraplegic.

Unless these cases are treated very early, you can do little or nothing with them.

Rest, bodily, mentally, and erotically, is the most important point; and if your patient will not submit to rest, entire rest, you had much better take your leave without prescribing; for all the medicine in the Pharmacopœia will do no good without the rest.

As regards medicine, I have found, and it was first mentioned to me by my kind friend Sir Benjamin Brodie, small doses of the tinct. lyttæ, ten to fifteen drops, with from two to four grains of the sulphate of zinc, the best. A generous, but not a stimulating, diet, must be advised.—*Med. Times and Gazette, April* 30, 1853, *p.* 439.

ORGANS OF CIRCULATION.

74.—ON WOUNDS OF BLOOD-VESSELS OF THE LOWER EXTREMITIES.

By William Lawrence, Esq., F.R.S.

When arteries under the calf of the leg are wounded it is difficult to follow the well-founded and generally-received rule of exposing and securing the injured vessels, even under the most favourable circumstan-

ces; that is, if we see the case at an early period, when no considerable swelling has occurred, and the natural relations of the surrounding parts are not obscured by ecchymosis. Frequently we do not know what vessel is wounded, nor the precise locality of the mischief. Sooner or later, and often very quickly, the whole limb becomes swollen by extravasation of blood, while all the soft structures may be lacerated, contused, and infiltrated with blood. Exploratory incisions, for discovering the injured vessel, would be undertaken with very little chance of success; in such a state of limb, they might be attended with dangerous loss of blood, and would certainly involve the necessity of extensive and deep incisions in the injured parts. Thus we come to the conclusion, that amputation is necessary in some of these cases, in order to prevent worse consequences. An example of this kind is afforded in the case of a patient who, although recovered from amputation of the thigh, has not yet left the hospital.

Case.—Violent Contusion of the Leg—Rupture of the Anterior Tibial Artery—Amputation of the Thigh—Recovery.—John Connor, aged forty-three, a labourer, of tolerably stout frame and intemperate habits, was admitted into the hospital on April 5, 1853, about 11 p.m., being at the time very drunk. He was brought in directly from a neighbouring street, where he had been knocked down by a fire-engine, of which one or both wheels had passed obliquely over the back of the leg from below the calf to the knee. The engine weighed 26 cwt., and there were fourteen men on it at the time.

On the next day, the limb, especially in the situation of the calf, was greatly swollen and tense, with slight livid discolorations, giving it a mottled appearance. There was no external injury,—not even a graze. The anterior and posterior tibial arteries pulsated, but so feebly, that some doubt was entertained on the point. Messrs. Archer, on whose accuracy I rely implicitly, verified the fact by feeling, at the same time, one of them an artery in the foot, the other the radial: the numbers corresponded exactly. Thirty leeches were applied in the evening, from increase of pain, which had been considerable during the day.

7th. Relieved by the local bleeding, which had been copious; but he did not sleep. An opiate at bed-time.

12th. The limb has been in more or less pain; and he has rested badly. Last night, great aggravation of suffering occurred in the calf of the leg, extending to the ankle and the heel, and still continuing. It entirely prevented rest. The limb was now enormously swollen from the ankle to the ham, and as hard as a board. This extreme tension, with severe and unremitting pain, urgently required relief. Accordingly, having found some little yielding to pressure on the external aspect of the limb, I made an incision, six inches in length, from a little below the head of the fibula downwards, and then opened the fascia, which was extremely tense, to the same extent. The divided integuments gaped widely, and the muscles protruded at the slit in the fascia. A small quantity of dark liquid blood flowed from the wound. Thirty minims of tinct. opii at bed-time.

13th. He was easier after the incision, and slept tolerably well during the early part of the night; but pain returned with great severity

towards morning, and it still continues in the calf, ankles, and heel. The entire circumference of the limb is swollen, with the same incompressible hardness. Pulse 92, small and soft; countenance worn and anxious.

15th. Great and continued suffering, with little rest in the two past nights, although two half-drachm doses of tinct. opii were taken each night. An incision of some inches through the integuments and fascia was made, on the inner side of the limb, where the tension seemed rather less than elsewhere, but with no useful result.

16th. As the formidable mischief in the limb, depending obviously on serious injury of some deep-seated vessel or vessels continued unrelieved, without any prospect of change, except to a more dangerous condition, amputation was the only means of saving life. With the concurrence of my colleagues, I proposed it to the patient, and performed it with his unwilling assent. The alternative of searching for the wounded vessel, by an incision in the calf, and, if it could not be found, proceeding to amputation, was mentioned. Such a course seemed to me altogether objectionable, as imminently dangerous to life.

The patient was brought under the influence of chloroform, and the limb was then removed by the circular operation. Ecchymosis had extended along the posterior aspect of the thigh, above the situation of the external incision, thickening and hardening the integument and subjacent structures—not, however, so as to interfere with the operation. Being relieved from pain in the part, the patient slept well, and was altogether better on the following day. The support of generous diet and wine required by his state of great weakness agreed well; and the healing process was completed quickly, without any unfavourable occurrence.

Examination of the Limb.—The muscles of the calf were lacerated and bruised to an extraordinary degree, the fleshy masses of the gastrocnemius being very nearly severed about the middle of the muscle. The soft parts covering the upper third of the fibula were in a similar condition. This bone had been fractured transversely, close to its articulation with the tibia; and the sharp edge of the fracture, driven violently against the tibia, had cut across the anterior tibial artery just at its passage through the interosseous ligament.

The posterior tibial vein was partially wounded about the midde of the leg; and there was a coagulum in the orifice. Under the calf and among the injured muscles there was a large accumulation of coagula.

The pulsation of both tibial arteries was felt in this case during the first two days that the patient was in the hospital, but not afterwards. This difference probably arose from the gradual extension of swelling to the foot, the pulse in these vessels having been very feeble previously. The free anastomosis between the anterior and posterior tibial arteries accounts sufficiently for the pulse of the former having been felt on the back of the foot, although the trunk had been completely divided in the leg. We know that pulsation has sometimes returned, through the medium of the collateral circulation, in the sac of a popliteal aneurism, after the femoral artery had been tied. We naturally examine the state of pulsation in the arteries of an extremity when the trunk from which

they proceed is supposed to have been wounded. That the continuance of pulsation does not prove that the trunk has not been wounded, is clear from this case, and was shown still more decidedly in one instance observed by Mr. Paget in this hospital. A youth was brought in with an open wound near the middle of the thigh, inflicted a few days before, and attended with profuse bleeding. The femoral trunk beyond the wound, the anterior and posterior tibial arteries pulsated naturally. The return of arterial bleeding on the twenty-first day made it necessary to expose the femoral artery, in which a longitudinal wound was found, not less than one-third of an inch in length.

As the posterior tibial vein was wounded in the case of Connor, the effused blood under the calf probably proceeded from that vessel; for the wound of the anterior tibial artery was towards the front of the limb, while the posterior tibial vessels and nerve were undisturbed in their position behind, so that it was necessary to raise them laterally, in order to trace out the seat of injury. In a patient brought into the hospital under the care of Mr. Stanley, the leg had been seriously damaged by the wheel of a carriage passing over it. There was great swelling, and the case was regarded as severe bruising, with ecchymosis. After some time, inflammation came on and extended, and the patient died. Rupture of the posterior tibial vein was found, with great extravasation under the calf.—*Medical Times and Gazette, June* 11, 1853, *p.* 591.

75.—CASE OF ANEURISM OF EXTERNAL ILIAC CURED BY GALVANO-PUNCTURE.

By Edmund U. Eyre, Esq., H.E.I.C.S.

[The patient, a Serjeant in the Madras Fusiliers, had for some days felt an uneasy sensation in the left groin, extending down the thigh, which soon became much swollen, and in a few days a tumour was discovered, the size of a fowl's egg, in this situation. From the 2nd August, 1852, to the 4th Sept., the case remained much the same. Signorini's tourniquet had been applied to the tumour, and month after month passed without any change. Under these circumstances, there was considerable discussion as to what should be done. He could not remain longer a burden to the state, and no attempt at radical cure was justifiable. Mr. Eyre proceeds,]

I had met with a few cases recorded, where galvano-puncturation was successfully resorted to. It was either in aneurism of small vessels, such as the temporal, or where compression of the vessels above could be maintained; indeed, the arrest of the circulation to some degree above the aneurismal sac was regarded as essential. In this case, owing to the situation, it was impossible to effect it; nevertheless I thought, under the circumstances of the case, it was warrantable to give galvano-puncturation a trial; and on the 4th Sept. two long fine needles were introduced an inch within the sac, each being connected with the wires of a galvano-magnetic machine. The object was to avoid shocks, and merely pass a current through the sac. Pressure, as firm as could be borne, was made

above, but it was insufficient to stop pulsation in the tumour. The sensible effect produced was, pain in the groin and violent agitation of the whole body. At the expiration of twenty minutes the needles were withdrawn. The tumour was pulsating as before. Strict quietude was enjoined. For three days after neither did the aneurismal tumour nor his general health give indications that any effect had been produced. On the 8th it is noted, "Tumour painful; is in a nervous and depressed state; cannot sleep." This condition passed off, and nothing presented worthy of notice till the 12th, when pain in the tumour recurred, and he was again in a nervous, restless state. Leeches were applied to the groin, and sedatives administered.

[On Sept. 16th there was much constitutional disturbance, with violent inflammation around the hip. Combated by purgatives and refrigerants. On the 19th the inflammation was subdued. The tumour was larger, but pulsation not so strong. Digitalis and morphia prescribed.]

27th. Tumour sensibly harder, and pulsation fainter.

October 6th. Pulsation to-day is very faint.

8th. Pulsation hardly to be felt.

11th. No pulsation for the last three days; the tumour is hard and diminishing; no pulsation can be heard by the stethescope for two inches above or below the sac.

20th. No return of pulsation, and the tumour is gradually lessening; limb but little longer than the opposite one; has lost the numbness so long felt in it, and only complains of want of power to walk.

It is unnecessary to continue further extracts from the journal. From the date last recorded to the present, January 4th, 1853, Serjeant H.— has been making good progress in walking.

The remains of the aneurismal sac feels like an enlarged inguinal gland, about the size of a nut. There is œdema of the leg still.

In the cases whose treatment by galvano-puncturation led me to try it in Serjeant H—, the cure was effected by a continuous current of electricity, producing coagulation of the blood in the sac. One may infer this, by the rapid effect, from a case of subclavian aneurism: "The tumour was felt to be becoming gradually solidified; and before the withdrawal of the needles, it had become perfectly solid, and pulsation was no longer felt in it." In another case of popliteal aneurism, a like rapid effect was not obtained (attributed to the agitation of the patient); still, in twenty-four hours pulsation ceased, and in seven days he left the hospital, walking quite well. This was not the *modus operandi* in the serjeant's case, but inflammation and deposit of lymph, which filled up the sac. This mode is a hazardous one, and was not intentionally induced. The galvanic effect was probably too violent to produce the former, though the machine—an electric magnetic coil one—was used at its lowest power. I thought at first too little had been done; but when I found the external sign of the inflammation going on within the sac, accompanied by much constitutional disturbance, I began to fear that too much had been done. I watched with solicitude for the dark spot on the tumour, the forerunner of sloughing. Happily, the threatened danger passed away. The patient was of sound constitution; he lay in

a spacious, well-ventilated ward, and the season was favourable; under opposite circumstances the event might not have been so propitious. Notwithstanding the medical cure effected in this case, I should reluctantly resort to it again for aneurism of the external iliac, unless I had the electric power under command; but still, a successful case by such means may not be without its value in the records of surgery.—*Lancet, July* 30, 1853, *p.* 94.

76.—ON THE INJECTION OF A CONCENTRATED SOLUTION OF PERCHLORIDE IRON INTO ANEURISMAL TUMOURS, TO OBTAIN COAGULATION OF THE BLOOD BOTH IN THE ARTERY AND THE SAC.

M. Pravaz, of Lyons, the original inventor of the treatment of aneurisms by electro-puncture, has just made public, through his friend M. Lallemand, a new method of obliterating arteries and aneurismal sacs by the injection of a concentrated solution of perchloride of iron. This plan of treatment has been brought before the Academy of Sciences of Paris and the Surgical Society, and has met with a very warm approval, as several successful cases have now been published. One of these refers to a varicose aneurism at the bend of the elbow, another to a popliteal aneurism, and a third to an aneurism of the superior orbital artery. It would seem that a very few drops of the concentrated solution are sufficient to bring on coagulation, as has been ascertained by numerous experiments. The practice is well worth trying in this country, as M. Lallemand fondly hopes that the perchloride will eventually supersede the ligature. It is strange that, in the speeches and discussions on this subject, the method of compression so successfully carried out in Ireland is hardly mentioned.

The preparation of the solution has been made public by M. Burin de Buisson, pharmacien, of Lyons, and is described as follows:—Take of sulphate of iron of commerce (emerald colour,) two pounds; water, six pounds; pure iron filings, the fifth part of a pound; sulphuric acid, half an ounce: put the whole into an enamelled cast-iron vessel and leave the latter upon the sand-bath until gas is no longer given off; filter, add to the fluid half a pound of liquid hydro-sulphuric acid, and allow to rest for twelve hours. Put, after that time, the solution upon the fire, boil for half an hour, and filter. To the filtered liquid add six ounces and a half of pure concentrated sulphuric acid; and place the mixture into an enamelled cast-iron vessel, which should be but half filled. Boil, and add, in small quantities, pure nitric acid, until it causes no longer the escape of red fumes. Remove the vessel from the fire, add to the fluid twenty-five or thirty times its weight of cold water, and the whole of the iron will be precipitated in the state of peroxide by the addition of a slight excess of ammonia. Wash the precipitate by decantation with pure water a great many times, and dry it in the air by spreading it in thin layers upon linen.

This dry and pulverized oxide is then calcined to redness in a large

and shallow iron vessel, so that the temperature may not rise too high. This is the martial saffron of the shops, which is, in fact, pure peroxide of iron when prepared as above.

The perchloride of iron is then obtained in the following manner:—Take of the peroxide of iron, resulting from the process just described, six ounces and a half; pure and white hydro-chloric acid, two pounds; mix, and allow the action to go on without fire for five or six hours; then put the vessel on a water-bath, and boil until the almost complete solution of the oxide is obtained; this should be done in a porcelain capsule, weighed beforehand. The liquid is decanted to separate the undissolved oxide, and the former is carefully evaporated upon the water-bath, constantly stirring, to the consistency of thick syrup, which is then weighed. Half this weight of distilled water is then added, the heat is kept up for a few moments, and the whole is thrown on the filter. The capsule and the filter should now be washed with a quantity of water, equal to that used in the last place, and to the first fluid obtained, as much of the second is added to get a mixture of the density of from 43·5 to 44 degrees.

By proceeding in this manner a very limpid fluid is obtained, with a slight acid reaction, but perfectly pure, having reached the maximum of saturation, and always identical. It may be kept without any of the salt being thrown down, provided the bottle be well stopped; the colour is dark-brown when the liquid is looked at in full, and of a greenish-gold colour when held to the light, or seen in a thin stratum. Five or six drops of this fluid, mixed with the white of an egg diluted with six drachms of water, are sufficient to coagulate the whole into a mass in the space of fifteen seconds. This mass firmly adheres to the bottom of the glass when the latter is turned up, and takes a pretty long time before it slowly drops, when the watery parts begin to run off, as the serum separates from coagulated blood.

At the meeting of the Surgical Society of Paris, held May 4, 1853, M. Debout presented the two carotids of a horse, into which perchloride of iron had been injected. In one of these vessels, for the distance of two inches, the artery being held by the fingers above and below, only six drops of the perchloride had been thrown. The clot formed had, however, been re-dissolved by the current of blood, and carried into the torrent of the circulation. The lining membrane of this vessel was healthy, except a small spot where an abscess was about to form. In the other carotid fifteen drops of the perchloride had been injected for two inches and a half of its length, the upper and lower part of this length of artery being also compressed by the fingers. This vessel remained plugged all the time the animal lived. On a post-mortem examination, the whole length of the clot was found adherent to the parietes of the artery, the lining membrane being the seat of suppurative inflammation. The vessel was quite obliterated both above and below in consequence of adhesive inflammation.

In a subsequent meeting, M. Debout gave a minute description both of the experiment and of the post-mortem appearances, and concluded that M. Pravaz, the discoverer of this property of the perchloride, was right in advising injections of very small doses. M. Debout, very pro-

perly added, that compression of the artery above the sac (as proposed and carried out by Dr. Bellingham, of Dublin,) should be resorted to as an adjuvant of the injection, as there is a tendency in the blood remaining free in the artery to break down the clot formed by the perchloride. The author of the paper mentioned a case of aneurism at the bend of the elbow, following venesection, in the sac of which coagulation was obtained by a continuous galvanic current; compression of the vessel was neglected, and a week after the formation of the clot the latter was destroyed and washed away by the force of the arterial circulation.—*Lancet, June* 18, 1853, *p.* 561.

77.—*False Aneurism of the Posterior Tibial Artery, from a Wound, &c.* By WM. ADAMS, Esq.—The injection of perchloride of iron caused coagulation of the blood in the spurious aneurismal sac, produced by division of the posterior tibial artery in a child aged four weeks. The firm clot squeezed out the serum, which was seen oozing from the surface of the wound. The instrument used for injection was a glass syringe, with a long and slender tube, which was made to penetrate the clot, and convey the perchloride to the fluid blood below.—*Med. Times and Gazette, July* 30, 1853, *p.* 124.

78.—*New Instrument for Injecting the Perchloride of Iron in cases of Nævus, &c.*—[In several cases in which this remedy had been employed in cases of nævus, two circumstances proved unfavourable to its success. In the first place, by its being in some too freely used, inflammation and sloughing had been produced; and, in the second, the flow of blood had prevented the defective instrument acting efficiently. To remedy this latter defect, Mr. FERGUSSON has invented the following:]

It consists of a very small glass syringe, the point of which terminates in a fine platinum tube. This tube is encased in another one, about a quarter of an inch longer than the first, ending in a sharp trocar-like point, and having, near its extremity, an oblique opening in one side. By rotating the outer tube on the contained one, their apertures may be made to correspond or otherwise, at the will of the operator. Thus, then, the necessity for two instruments is quite done away with. The syringe having been charged, the operator rotates the outer tube, so as to conceal the orifice of the inner one entirely, and protect it from the ingress of blood. In this state the instrument is passed into the centre of the tumour, and, having been stirred about as much as may be thought desirable, the tube is turned back, so as to expose the orifice; and the piston being at the same moment depressed, a drop or two of the solution is squeezed out. It may be supposed, that the smallness of the whole instrument, and the diminutive size and oblique position of its aperture, will afford considerable guarantee against the injection of too large a quantity, while on its advantages, in case of employment, it is scarcely necessary to insist.—*Med. Times and Gazette, Aug.* 27, 1853, *p.* 219.

79.—CURE OF AN ANEURISM OF THE SUBCLAVIAN ARTERY, BY MEANS OF THE EXTERNAL APPLICATION OF THE CHLORIDE OF ZINC.

By M. Bonnet, Lyons.

M. Bonnet announces the complete cure of a patient suffering from subclavian aneurism, seen by M. Lallemand upon the 14th day of treatment of the disease, by successive applications of the paste of chloride of zinc. The chloride of zinc, penetrating by imbibition into the deeper parts of the tumour, produced complete coagulation of the blood, which was detached from the walls of the aneurismal cavity without any hemorrhage. The patient quitted the hospital three months and a-half from the commencement of the treatment. He could at that time take a walk for half an hour at a time, and presented, as the only trace of his disease, a superficial ulceration, which was nearly healed. The clot, which came away with the eschar, was forwarded to M. Lallemand by M. Bonnet.

The patient, aged 25, had received in the left supra-clavicular region a blow with a knife, which, dividing the whole brachial plexus, and touching either the subclavian artery or one of its branches, was followed by profuse hemorrhage, and subsequently by the formation of an enormous aneurism. The rapid enlargement of the tumour, and the frequent discharge of blood from the wound, threatened the life of the patient, and rendered immediate assistance necessary. The application of a ligature between the inner border of the scaleni muscles and the aorta was rejected by both M. Bonnet and by his colleagues, as too dangerous and too difficult. The galvano-puncture was also negatived, because it it was impossible to suspend, even for a moment, the pulsations and the *bruit de souffle* in the aneurismal pouch. The injections of the perchloride of iron were not then known, (January 2); and, possibly, the enormous size of the aneurism, its proximity to the heart, and the impossibility of compressing the artery which conveyed the blood to it, would have counter-indicated its employment. In this difficult position, M. Bonnet determined upon cauterisation by the paste of chloride of zinc.

The first eschar was produced in the centre of the tumour. Every two or three days, Bonnet removed, with a bistoury, the superficial layers of the slough, and for five weeks he continued a series of applications of the paste, which penetrated daily both in depth and extent. Upon the 14th day, the pulsations of the *bruit de souffle* ceased; at the end of the second month, the eschar began to detach itself without any hemorrhage. The clot came away with the eschar. Bonnet affirms that modern authors are wrong in attributing this method of treatment to Ambrose Paré, Guattani, or Marcus Aurelius Severinus; in none of the original works is it mentioned. The ancients knew nothing of the chloride of zinc, which was introduced into practice by M. Canquoin.

Bonnet first thought of employing this escharotic in the treatment of aneurism, by observing for the last ten years its power in coagulating blood and arresting hemorrhage. He found, 1837, that it got rid of varicose veins without the occurrence of the bleeding which frequently

ensued after the application of potassa fusa. Both he and his colleagues —MM. Barrier, Bouchacourt, Desgranges, and Vallet—have often taken a firm coagulum from vessels exposed to its influence. He has seen it entirely remove hemorrhoids, varicoceles, and erectile tumours, by penetrating into the vessels by imbibition, coagulating the blood, and rendering the whole tumour firm. That it arrests arterial as well as venous hemorrhage, was shown by its action upon goitre, as stated by M. Philipeaux, in a memoir founded upon some of Bonnet's linical lectures.

The eschar separates about eight days after the application of the paste; it can, therefore, be easily retained by successive applications for a month, or even longer.

MM. Bonnet and Gensoul have lately proved that the chloride of zinc may cure the disease known as aneurism by anastomosis. A tumour, occupying the summit of the head, an inch in thickness, and of rounded surface, about half a foot diameter, (15 centimetres), consisted of an immense number of anastomosing arteries, pulsating with a loud *bruit de souffle*, and nourished by seven large trunks coming from the frontal, the temporal, and the occipital region, each about the size of the brachial artery. Injection was insufficient and impossible; pressure, continued for a year, failed, and the surgeons were talking of tying the two carotid arteries. The cauterisation by the paste of the chloride of zinc effected the separation of the tumour without any hemorrhage whatever, from each of the nutritious arteries. The result of the case, not yet complete, is to be communicated at a future meeting of the Society.—*Med. Times and Gazette, July* 23, 1853, *p.* 98.

80.—CASE OF ERECTILE TUMOUR OF THE ORBIT.

By Dr. Daniel Brainard, Professor of Surgery in Rush Medical College, Chicago, Illinois.

[On August 1st, 1851, the patient, a farmer, first consulted Dr. Brainard for a tumour of the left orbit, possessing all the aneurismal characteristics. He supposed it to arise from a severe kick from a horse, fracturing the lower jaw. The tying of the common carotid was proposed, but he declined, until the 11th of November, when it was performed in the usual manner. Bags of pounded ice and salt applied to the orbit relieved the acute sensibility of the part. The tumour gradually diminished in size, though a thrill could still be felt.]

On the 11th November, 1852, just one year from the first operation, he returned to me. At this time the entire orbit was filled, the lower lid was concealed by the fungous projection, the eye pressed outwards and downwards, and at the root of the nose and inner part of the superciliary ridge there was an elastic swelling, which had caused the absorption of the bone. It was at that point that the pulsations were strongest and the thrill most distinct. The small vessels of the forehead and side of the nose were greatly enlarged, pulsated strongly, and the latter gave the peculiar thrill of the disease very sensibly. His general health was much impaired, and he had been able to come to the city by railroad only with great difficulty.

The question of the proper treatment to be employed in a case of erectile tumour of the orbit, when the ligature of one carotid has failed to effect a cure, is one of some difficulty. The attention is naturally turned to the other carotid; but even if the ligature of that were likely to succeed, the risk in this case was too great, since it was found that compression of it for a few seconds rendered him perfectly insensible. None of the means resorted to for the purpose of obliterating this vascular tissue had ever been tried on deeply-seated tumours like those of the orbit. On carefully reviewing them all, it was determined to try puncture with hot needles. This was done first on Nov. 13th, 1852; the needle used was of the size of a common knitting-needle, sharpened to a triangular point and set in a handle of bone. After being heated in the flame of an alcohol lamp, it was plunged into the tumour about an inch from the root of the nose, in the course of the superciliary ridge, and carried downward and backward to a depth of over three inches; on withdrawing *it*, some bleeding followed, which was readily stopped by slight pressure. For two days there was little pain or swelling; but on the third day the inflammation was acute, the swelling extending over the face, and presenting an erysipelatous appearance. On the fifth day this began to decline, and in a week was nearly gone. While the inflammation was at its height the tumour was more firm and the thrill less distinct, but as it subsided the elasticity and pulsation rapidly returned.

Nov. 25th. I repeated the operation, making the puncture half an inch nearer the nose, and carrying it to a depth of only one inch. The effects corresponded with those before described, but were a little less violent. On the third day the sound was diminished, and the firmness of the tumour very sensibly increased. On a careful examination it was found that the morbid tissue extended over the bridge of the nose and down to the inner canthus of the right eye, where a thrill could be distinctly felt.

Dec. 2nd. A puncture was made on the left side of the bridge of the nose, the needle being carried obliquely upward and to the left side. The inflammation resulting from this puncture was acute, and a superficial suppuration occurred about it. The thrill upon the right side of the nose quite disappeared.

The effect of these three punctures was to limit the spread of the tissue upon the forehead and nose; but the inflammation although acute and extensive, was superficial, and the mass of the disease at the centre was still unaffected. It was evident that the needles cooled in passing through the tissues, so as not to cauterize much below the surface.

It was therefore determined to change the treatment, and inject a fluid into the centre of the tumour capable of effecting its obliteration. For this purpose a solution of the lactate of iron, of the strength of eight grains to one fluid drachm of distilled water, filtered through paper was preferred. The reasons for believing in the safety and efficiency of this remedy will be given below.

14th. I punctured the tumour at its most prominent part with the infiltrating canula, carrying it to the depth of about an inch; on withdrawing the stilet arterial blood followed. A fluid drachm of the

above-named solution was immediately thrown in with a small syringe, constructed for the purpose, and the canula withdrawn. The immediate effect was an intense pain in the left temporal region and a flushing of the face, which latter only lasted a few seconds. A chill followed, accompanied with nausea and vomiting. Reaction took place in an hour, but the vomiting continued, and for twenty-four hours all drinks were ejected; pulse 63.

15th. Vomiting continues; pain less; upper lid much swollen; pulse 65.

16th. Vomiting less; no pain; has slept well; pulse 60; swelling increased, and so tender as not to bear the slightest touch.

23rd. For the last six days the vomiting has gradually diminished; the pulse is natural; the tumour is less tender, firm, and the pulsation perceived only at the external angle; frequent lancinating pain is felt in the orbit.

During the whole of this treatment, both of punctures and infiltration, the head has been kept enveloped in bladders filled with a freezing mixture of pounded ice and salt, which was very grateful to the patient. He now began to complain of its being too cold. The heat in the head was reduced to the natural standard, and from the time of the infiltration neither thrill nor sound has been perceived. The veins of the face were much diminished in size, and the pulsation of the arteries reduced to its natural state. A slight pulsation was still perceptible at the external angle of the eye, for which a puncture was made at that point with a hot needle, on January 4th, 1853.

Jan. 10th. From the time of the last puncture no pulsation has been perceived, the swelling subsiding. At this time an opening was found to exist on the anterior surface of the globe of the eye, which still remains protruded between the lids. This was followed by severe inflammation of the globe, which lasted several days. The discharge from the opening was at first the humours of the eye, afterwards pus, but no blood.

Feb. 5th. Swelling gradually subsiding; tumour firm, no pulsation; but little pain. The patient slept for the first time for more than a year without some one to keep wet cloths upon the eye, dressed himself, and walked about the house; health good.

March 5th. Swelling entirely disappeared; the globe of the eye perfectly collapsed; lids closed.

June 6th. The patient has been pursuing his ordinary occupation for three months; his health appears perfectly restored. The left orbit seems entirely excavated and free from disease.

At this time he was presented at the annual meeting of the Illinois State Medical Society, and examined by a large number of its members, who concurred in the opinion that the case might be regarded as perfect.

Remarks.—It will readily be understood that so serious an operation as throwing a fluid ounce of a solution of the lactate of iron, at a point almost to saturation, directly into the current of the circulation, would not be ventured upon without the most satisfactory reasons for regarding it, firstly, as safe; secondly, as effectual. I propose now to offer briefly some of the reasons for so regarding it.

In 1850 I was engaged in making inquiries concerning the effects of this salt in certain diseased states of the system, and was induced, from theoretical views, to try the effect when thrown into the veins. Before doing this upon a human subject, I tried it upon a dog, dissolving, rather imperfectly, ten grains of it in one fluid ounce of distilled water. This was thrown at once into the saphena vein of a middle-sized dog, and the experiment was twice repeated without any ill effect.

In December, 1851, I first used it upon the human subject, using in the course of eight weeks nineteen grains of the salt in solution. The largest amount injected at one time was three grains, dissolved in three drachms of distilled water. The number of times it was employed in this subject was nine. It had no ill effects, but the contrary, what is pertinent to our present subject is, that each of the veins into which it was thrown at the bend of the arm was found after a certain length of time to be obliterated, and converted into a firm cord, without there being produced either pain or perceptible inflammation. I have since used it in four other cases,—in two of them once, and in the other two twice each,—without any unfavourable effects. In one of these cases in which it was used twice, a vein was opened a second time, three days after the first operation, but it was found filled at that point with coagulum, which of course was not disturbed, but the injection made by another vein. Its tendency to obliterate the veins by a gradual process of thickening the coats and obstructing the circulation, was thus made sufficiently apparent, while its safety, used with requisite precautions, was clearly demonstrated. As these cases related solely to the veins, before using it in the case of tumour of the orbit, in which it might enter directly into the arterial circulation, it was thought proper to try it upon an artery in a dog. Accordingly, three grains of the lactate dissolved in three fluid drachms of distilled water, were thrown into the carotid artery of a small dog, and the vessel tied. The only effect was a slight irregularity of the action of the heart, which continued but a few seconds. As this entered directly into the cerebral circulation, its safety when used in much smaller quantity in the human subject might legitimately be inferred. The result, as used upon the tumour, fully justified its employment, although the effects produced were somewhat severe. They were greatly less so, and less dangerous, than those resulting from the ligature of the carotid artery: and used in smaller quantity, repeated if necessary, it seems to promise relief without the necessity of resorting to that operation.

I may add here, that I have since used the same solution upon an erectile tumour of a venous character, of the size of a pigeon's egg, upon the inside of the lower lip, by injecting it at three different times, without any other effect than a slight tenderness, followed by gradual diminution of size and induration of tissue; but the cure is not yet complete.

The applicability of this practice to the treatment of varicose veins and aneurisms will readily suggest itself, but further experiments will be required to determine to what extent it can be relied upon in these cases. The number of the Revue Medico-Chirurgicale de Paris for May, 1853, contains some experiments by M. Pravaz, M. Giraldes, and M. Debout, on the coagulation of the blood in the arteries of animals by the injection

of the solution of perchloride of iron, and also three cases in which it had been used for the treatment of vascular tumour in the human subject, in each of which suppuration, and in one gangrene, followed. These results are not of a nature to encourage further trials of that substance; but if we take into consideration that the solution of the perchloride of iron is a substance foreign to the normal constitution of the blood, and produces instant coagulation when brought in contact with it, whereas the solution of lactate of iron is composed of elements which enter into the composition of the blood; that when thrown into the living vessels it does not coagulate it, but produces a thickening of the coats and a deposition of coagulable lymph from subacute inflammation; the difference between the two results will be readily understood. It is probable that the solution of the lactate, when thrown into the vessels, immediately undergoes decomposition, the acid combining with the soda of the blood, and the base passing into a higher state of oxidation in which it naturally exists in that fluid. In no case has this solution, when thrown into the blood or into a vascular tumour, shown a tendency to produce suppuration, but in slow inflammation of an adhesive kind and limited extent. In one case, where it was inadvertently pressed in small quantity into the subcutaneous cellular tissue, instead of into the vein as intended, a hard swelling having all the appearance of a boil or small carbuncle was the result; but even this effect will not be produced by it, when used in that manner, unless the solution be in a certain degree concentrated.—*Lancet, August* 20, 1853, *p.* 162.

ORGANS OF RESPIRATION.

81.—SYPHILITIC ULCERATION OF THE FAUCES AND LARYNX; TRACHEOTOMY.

Under the care of JOHN HILTON, Esq., F.R.S.

[The importance and value of the operation of tracheotomy in imminent cases need not be insisted upon, but it rarely happens that we meet with a case where an artificial larynx was required for so long a period as in the following one. We owe the details of the case to the kindness of Mr. Stevens, who has watched the case now for a period of some years.]

Sarah C—, 28 years of age, and unmarried, whose habits of life have been very irregular, was admitted into Guy's Hospital, June 16, 1847. The patient had been in the hospital one year before admission, when sh suffered from severe secondary ulceration of the uvula and soft palate. She remained in the hospital for a week at that period, the treatment adopted being quinine, and the application of nitrate of silver to the ulcers of the throat.

When admitted, on July 16, 1847, as stated above, her person and symptoms were described as follows:—The patient is a sallow, ill-conditioned looking woman, small, and uncleanly, with a countenance expressive of great anxiety. Since she left the hospital (a twelvemonth before this description was written) she has never been well, her mode of life has been very irregular, and she has frequently caught cold. The edge of what remains of the soft palate is swollen and ulcerated, as is also the left tonsil; the throat generally is inflamed, and the epiglottis very irregular in its outline. The breathing is stridulous, 13 per minute; pulse 84, thready; skin cool and moist; tongue pale and white. Mr. Hilton believes the disease to be situated in the arytenoid cartilages. Donovan's solution, in decoction of bark, was prescribed, with morphia at night, and a blister over the larynx.

For the next five days the breathing became more and more difficult, though the patient sedulously used the vapour of hot water to the throat. The peril soon became so imminent that Mr. Hilton performed tracheotomy five days after admission.

An incision, an inch in length, was made as near the middle line as possible, and a conical curved trocar and canula thrust into the trachea about one inch and a half above the sternum. The trocar was then withdrawn, and, to prevent the canula from slipping, it was tied round the neck by a tape. The operation was rendered somewhat difficult by the head of the patient being forcibly thrown forwards on the chest.

Immediately after the opening of the trachea the dyspnœa was extreme, but in about an hour the woman became tranquil, and slept comfortably at intervals during the night. She was ordered wine and beef-tea. For five days after the operation the woman suffered considerable pain in the head and in the wound; several times she was almost choked by the cough and accumulation of mucus in the tube; but on the fifth day the pain abated considerably, and the respiration became easier. She experienced great relief by inhaling the steam from an infusion of conium.

The patient continued taking about six ounces of wine per diem, and on the eleventh day after the operation, the report states that she slept well, the respirations were only twenty in a minute, and the pulse 104, soft. Mr. Hilton then ordered quinine, and good diet, with a continuance of the wine.

On July 11th, twenty-one days after tracheotomy, she began walking about the ward without fatigue, and was pronounced convalescent. Her progress from this time was most satisfactory; she gradually lost the sallow, unhealthy hue of skin, and gained flesh rapidly; the wound contracted firmly around the canula, the latter requiring, however, occasional cleansing. No topical applications were used to the palate and larynx, but the ulcerations did not extend; they gradually assumed a healthier appearance, and about three weeks after the operation the throat was quite well.

With Mr. Hilton it was a question as to the propriety of removing the original canula, and substituting a broad one; but on considering the subject, as there was a probability of much inconvenience resulting from the change, it was decided that the canula should remain untouched.

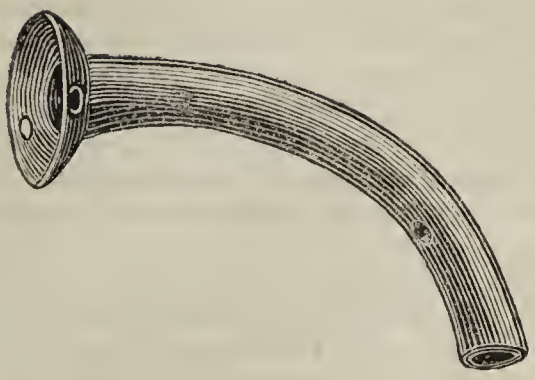
By the patient's own desire she was discharged on Aug. 10, 1847, seven weeks after the operation, and was earnestly enjoined to be careful of exposure to cold, and to wear constantly two or more folds of muslin over the mouth of the canula.

This patient stayed away for about six years, when she was re-admitted May 12, 1853, for a slight bronchial affection, much emaciated, and suffering more from want than from actual disease. She was still wearing her canula, and Mr. Stevens, who had been attending to her for a long time at her residence, was kind enough to put the following memoranda at our disposal:—

"Since the period that this patient left the hospital in 1847 to the present time, I have constantly seen her. She has been living in Spitalfields, and has had three children since the operation was performed. Her husband has frequently during these years been out of work for days, sometimes for weeks, together, so that her living, at the best of times hardly sufficient, has very often been totally inadequate, and she has consequently endured much privation. Her different places of residence in Spitalfields have all been characterised by darkness, dirt, and utter cheerlessness; she has been exposed continuously to all the vicissitudes of the weather, (to some extent perhaps unavoidably,) her clothing being inappropriate and insufficient, and she has moreover entirely disregarded all our entreaties and injunctions relative to the tube being lightly covered with a fold or two of muslin; frequent and sometimes rather severe attacks of bronchitis have been the result of this imprudence and carelessness.

"The tube has required removal and cleansing four or five times in the year, of course oftener when there has been bronchial disturbance present; the secretion has at all times passed freely and easily *through the canula,* and never through the mouth. Carefully repeated trials have failed to detect the smallest passage of air through the larynx and mouth till about four months ago, when a very slight stream was found to pass, so small that even now (June, 1853) it is only sufficient *to bend* the flame of a candle. There has been no appreciable voice, and it requires the greatest possible attention in observing the movements of the lips to be enabled to recognise the enunciation of a word. Further to demonstrate the impervious condition of the larynx, I may mention that when the finger has been applied over the end of the canula, or, the canula being absent, over the external orifice, complete incapability of breathing has been the result.

"Generally speaking, I have had no difficulty in removing the canula, and substituting another, during the cleansing of the original one. On the last occasion, however, Feb. 23, 1853, there was great difficulty in the re-introduction of the tube, owing to a very relaxed state of the tracheal mucous membrane, and towards the close of this nearly fatal operation, I was compelled to use considerable force to overcome the sphincter-like contraction of the external orifice. On three or four occasions, small abscesses have formed in front, but independent, of the trachea, and these have occurred more often *below* than above the canula.



"The form of tracheal tube through which this patient has breathed for six years is here introduced, for the purpose of adducing the strongest evidence of its aptitude as regards the purpose for which it was intended. It should be also noticed that it is a curve through which a trocar can be introduced with facility; indeed the tube here represented *is the very one* which was employed with the trocar at the time of operation, and has been used by the patient during at least four years out of the six."

Mr. Hilton treated this patient, upon her re-admission, on the tonic and restorative plan, and she left the hospital in a month, greatly improved, and, in what might be considered for her, good health. It is thus clear that a canula can be worn for years under the most unfavourable circumstances, and it is also evident that this patient could not have lived without the performance of the operation, seeing that the larynx is now almost completely closed. This case might also allay the fears of those who advocate tracheotomy in epilepsy, as it is proved that a canula can be worn without danger for a considerable length of time.—*Lancet, July* 16, 1853, *p.* 57.

82.—ON TRACHEOTOMY ABOVE THE THYROID ISTHMUS, ILLUSTRATED BY A CASE.

By Dr. Charles Edwards, A.B., Cheltenham.

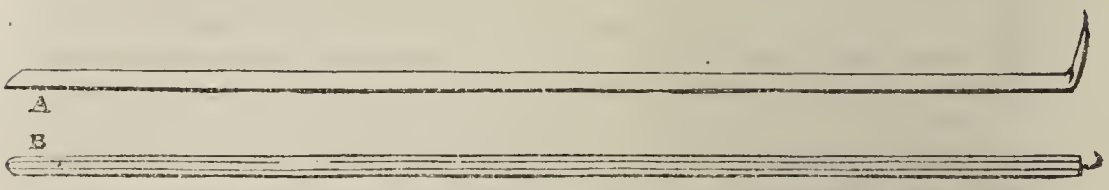
The space operated in, which I shall term subcricoid, is bounded above by the cricoid cartilage, and below by the isthmus of the cricoid thyroid gland. It is about one-fourth of an inch in extent. Ink a line precisely over this space, and draw it up over the thyroid cartilage, upon which incise the retracted integuments; you thus obtain a strictly rectilinear and median incision.

Next, get clearly the cricoid cartilage and a ring of trachea below; take now a steel director grooved throughout, one extremity of which passes off from the open groove, with a short tenaculum curve, as figured in the diagram; pass this curve beneath the lower margin of the cricoid cartilage, and hook the latter well forward and upwards, in this way, rather than by "pressing the larynx" as advised by Mr. Maclise, steadying the trachea.

Now pass into the groove of director the point of a strong narrow scalpel, which thus cannot slip to either side during any convulsive movements of the trachea, but immediately pierces it, thus rendered tense. Should the thyroid isthmus or any pulsating vessel be in the way below, the puncture should barely admit the extremity of a probe-pointed bistoury,

in which case introduce the bistoury on the grooved tenaculum into the trachea with its back to the cricoid cartilage, and in a subcutaneous fashion you can divide as many rings of the trachea from within outwards, underneath the isthmus, as may be necessary to admit the tracheal tube without carrying it so far forward as to wound the isthmus, or even drawing it down. The introduction of the tube in this limited space will be much facilitated by the same directing and fixing tenaculum, and the distension of the more superficial parts, by its introduction, will prevent a drop of blood entering the trachea.

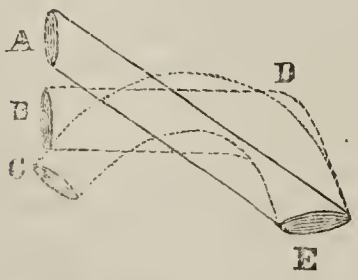
Finally, with respect to the shape of the canula, it is well apprehended that a straight tube will press and irritate the posterior wall of the trachea; but I would here especially observe that curved tubes, if short, are easily displaced by coughing, &c.; or else secured by a ligature so tight round the neck as to obstruct the cervical circulation. If sufficiently long to be retained by moderate fastening, they alike objectionably press against the anterior wall. (See illustrative diagram.) A further



A. Lateral view of directing tenaculum.
B. Posterior view of ditto, showing the groove.

objection, common to both the straight and ordinarily curved is, that from the position of their extremities against the tracheal parietes, neither air nor mucus can freely pass through either tube.

All these difficulties may be met by using an elbow-shaped, obtuse-angled tube, the angle being at the juncture of the upper with the middle third, which, as shown in the engraving, will simply lie in the axis of the trachea.



E A. Straight canula.
E D C. Curved tube.
E D B. My obtuse angled ditto.

I will now subjoin my case of operation, so far as it has gone, trusting that the above practical points may be useful to parties called, as I was, to operate without a moment's warning.

On Sunday night, at nine, p.m., Mr. Groves, a respectable tradesman, had a rapid succession of epileptic fits up to eleven o'clock, had, it appears, been left by his then medical attendant. At eleven I was summoned to take charge of the case. The laryngismus was terrific; and he, being a Roman Catholic, now in a short comatose interval, had received the last rite of his church.

In consultation with Dr. Allendyce, after trying every possible expedient till one a.m., I proposed tracheotomy. The only question was, whether, after the measures already adopted, it was worth while to risk

the character of the operation on a case so utterly hopeless. I operated by candle-light, at half-past one a.m., during a short comatose interval of regularly cumulative—shall I say culminating?—laryngismus tending to asphyxia.

For the entertainment of Dr. Radcliffe, I now enumerate the following facts:—

1st. The fits, the recurrence of which we could have predicted almost to a minute, immediately ceased. Whatever congestion might have caused them, there was no inflammation to remove them. But there was the shock of the operation! Would Dr. Radcliffe's physiology propose to the profession any operation equivalent in shock and sequelæ in any other part of the body as equally anti-epileptic? If the locality establishes the difference, that local operation—tracheotomy—is the cure.

2ndly. He was operated upon in a state of insensibility; *ergo*, the cessation of the fits were not, at least, the result of HIS FAITH.

3rdly. This case does not "prove too much," as Mr. Cane has stated, as *abortive* fits have occurred every day, except Wednesday; nor yet too little, as they stand in strange contrast with the former, continue but for a few moments, are not even tracheleau, and frequently allow the patient instantly after to resume his conversation—strictly as yet, and scarcely the *petit mal*.

4thly. Their recurrence or absence concurs so regularly with the clogging or cleansed state of the canula that their frequency or otherwise might be almost fixed beforehand by the amount of attention to the tube. This will account for Dr. Verga's case of fistula co-existing with epilepsy. Was the fistula always fully patent? And besides, "he died of tabes;" not, then of epileptic laryngismus!

5thly. I have had as yet no consecutive fever to control or diminish the fits. His most tranquil and cordial days have been his least fitful.

Finally, I would observe that to attribute any one thing possibly to any other thing is probably easier to some minds than to offer a theory philosophically founded, and likely to issue in the saving many lives; nay, easier than even to wait till time and experience establish or otherwise the relation of cause and effect between laryngismus—not epilepsy—and its cure by tracheotomy.

P.S. Tuesday, May 17th, 1853.—Patient has had no fit, abortive or otherwise, since Saturday evening, seven o'clock; walks abroad and follows his usual employment. In fact, since a properly patent canula has been used and kept cleaned, up till last date, May 14th, his slight epileptic abortions were gradually yielding, and since gone.—*Lancet, May* 28, 1853, *p.* 492.

ALIMENTARY CANAL.

83.—PERMANENT CURE OF REDUCIBLE HERNIA.

By Dr. GEORGE HAYWOOD, Boston, Massachusetts.

[A committee appointed to enquire into this subject, after a careful examination thereof, came to the following conclusions:—]

1. That there is no surgical operation at present known, which can be relied on with confidence, to produce in all instances, or even in a large proportion of cases, a radical cure of reducible hernia.

2. That they regard the operation of injection by the subcutaneous method as the safest and best. This will probably in some cases produce a permanent cure, and in many others will afford great relief.

3. That compression, when properly employed, is, in the present state of our knowledge, the most likely means of effecting a radical cure in the greatest number of cases.

[In an appendix to their report, one of the committee, Dr. Mason Warren, describes an operation proposed by Dr. Pancoast for the radical cure of hernia.]

The contents of the hernial sac being returned into the abdomen, and the ring explored to ascertain that no portion of the intestine protrudes, the pad of a well-fitting truss is slipped down so as to make pressure on the inguinal canal, and prevent any escape of the hernia. With the forefinger of the left hand the spermatic cord, as it passes out from the external inguinal opening, is pressed upwards on the pelvic bone, so as to prevent it from being injured. A delicate trocar and canula, the latter having fitted to it a small Anel's syringe, is now carefully but firmly forced through the integuments with a rotatory motion to facilitate its progress, and pushed forward till it enters the external inguinal ring or neck of the sac. The trocar being now withdrawn, the canula is kept firmly in place, and twenty or thirty drops of the tincture of iodine, tincture of cantharides, or sulphuric ether, thrown in and lodged in the neck of the sac, when this is practicable, or else in the vicinity of the external abdominal ring. Subsequently to the operation, a small compress is applied over the minute wound made by the trocar, the pad of the truss slipped down over it, and the patient directed, for a week or two, to maintain the recumbent position.

In addition to the injection, in some of the operations, a tenotomy knife was previously introduced, and the internal surface of the neck of the sac scarified. The wound made by the knife in these cases much facilitated the subsequent introduction of the trocar, which is with some difficulty worked through the integuments.

In no instance did any bad result follow the operation—the pain and inconvenience hardly amounting to that presented in a case of hydrocele treated by injection, or in any simple operation.

The following case, attended with success, will serve as an illustration of the course generally pursued:—

A male child, three years of age, with congenital inguinal hernia of the right side, was brought to the Massachusetts General Hospital to obtain relief, if it was possible, as no truss had been found to retain the protruded intestine in the abdomen, and the pain and inconvenience from the infirmity were great. On examination, a tumour, the size of a small orange, was found to occupy the scrotum. By a little manipulation, the contents were ascertained to be a portion of omentum, a loop of intestine, and the testicle—the whole of which, by care, could be easily returned into the abdomen.

The question which first presented itself was, whether the testicle could be separated from the other parts, the adhesions being quite intimate between them, so as to admit the return of the intestine and omentum into the abdomen, leaving the testicle in the scrotum. This being determined, the operation was performed as follows:—The intestine and omentum being returned into the abdomen, and the testicle prevented from following, the spermatic cord was held out of the way in the manner stated above. A subcutaneous incision was then made by a cataract knife, the point of which was carried into the sac, and the neck scarified in different directions. Through the aperture thus made, a small trocar and canula were introduced; the former being withdrawn, the syringe was adapted, and thirty drops of sulphuric ether were injected. The truss was now applied.

The operation was performed on October 28, 1847, and there was every prospect of success, when, from a violent paroxysm of crying, the hernia was forced down on December 9. On the 12th, the injection was repeated, and resulted, on the following day, in a swelling of the scrotum, such as is observed after the injection for hydrocele. On December 22, the report was made that the hernia came slightly down, and was returned with difficulty, "the aperture being apparently quite small." By the end of the month, it was stated that the hernia was perfectly retained.

I have been informed by an individual who saw the patient a year afterwards, that the cure was permanent.

During the treatment of this case, a slight suppuration took place under the pad of the truss, which, the patient being somewhat fractious, was necessarily applied pretty firmly to prevent the recurrence of the hernia after the operation.

In a large proportion of the other cases operated on, the patient experienced much relief, though still obliged to wear a truss. In one case, where the hernia was quite large, no relief was experienced. A female, with a double femoral hernia, on whom the scarification and injection were once or twice repeated, expressed herself much benefited by the operation, the hernia being retained, and the suffering previously experienced much relieved. Another patient, a labouring man, was seen by me six months after the operation; the rupture had not recurred, but he still wore a truss. Previous to this time he had not been able to work without forcing down the intestine under the pad, causing so much pain and ill health as to have induced him to come to Boston for relief.

Some allowance for the want of perfect success in the above operations must, of course, be made from the tentative mode in which they were performed through fear of a serious result.

From a comparatively limited experience, I derive the following conclusions.

1. That the operation, when carefully performed is safe.

2. That, in ruptures where the neck of the sac is small and the abdominal aperture not too much enlarged by repeated descents of the hernia, there is a prospect of a radical cure.

3. That, in most cases, the operation mitigates the infirmity, allowing the hernia to be more readily retained by the ordinary mechanical means.

[Dr. Samuel Parkman stated that he had seen operated upon four cases of hernia for their permanent cure.]

The first case was in January 1848; the second and third in September 1849; and the fourth in October 1851. The herniæ were all inguinal. The method employed was scarification of the pillars of the ring and adjacent parts, with injection of tincture of iodine, by means of a syringe armed with a point at the nozzle. The precise situation where the fluid was thrown I believe it to be impossible to determine. It is clearly more probable that it should have been into the cellular tissue around the neck of the sac, than into the sac itself. In all the cases I compressed the canal to prevent communication with the peritoneal cavity. Rest in the horizontal position was enjoined, and a bandage applied. Some tenderness and swelling resulted in all the cases.

The first patient considered himself relieved, that is, he felt that the hernia descended with more difficulty.

The second and third cases presented no marked results.

The fourth case is worthy of note:

A healthy man, twenty-five years of age, stated that the right testicle did not descend until his tenth year, and was then followed by a hernia. This hernia had always been reducible, but the testicle was returned with it. A truss had but imperfectly retained the hernia, and he was desirous of relief if possible. On examination the ring appeared very large, and coughing or straining produced the descent of a mass the size of a goose-egg, on the front of which was the testicle, which could not be separated from the hernia proper. I proposed to retain the whole mass, and with this view, between the 29th October and 10th November, I did four separate operations, each time scarifying the pillars of the ring and injecting tincture of iodine. Each operation was followed by an effusion into the parts, and on November 14, when the patient was discharged by his own request, he stated that he had a feeling of firmness in the ring which he had not previously. I have no doubt, however, that the hernia could easily have been made to descend.

The conclusion from this small experience appears to me to be —

That the operation by scarification and injection, being perfectly safe, is worthy of being practised to test the amount of its efficacy; but the fact that so many other methods, which, *â priori*, would seem more calculated to produce the same expected result, viz., the plugging the neck of the sac or ring with lymph, have not cured the disease, should suggest very great caution in the formation of an affirmative opinion from any but a large and long experience.

The operation, as practised by Dr. Wood of Cincinnati, also in my opinion offers many inducements to surgeons, to make it the subject of experiment; since, proposing as it does, the *approximation* as well as agglutination of the pillars of the ring, it attempts to meet the objection that may be made against all the other methods, viz., that the tendinous opening remaining the same, but an imperfect barrier can be opposed to the re-descent of the hernia.—*Edinburgh Medical and Surgical Journal, Oct.* 1853, *p.* 353.

84.—STRANGULATED FEMORAL HERNIA—REDUCTION—SUBSEQUENT GANGRENE OF BOWEL—RECOVERY.

Under the care of E. Stanley, Esq.

[The patient, a female, aged 44, was admitted into St. Bartholomew's Hospital Dec. 29, 1852. The bowel had been strangulated eighteen hours.]

She was, on admission, in a condition of extreme prostration, with an anxious countenance and scarcely perceptible pulse. The tumour was very tense, and about the size of a goose's egg. Mr. Stanley did not deem it warrantable to again attempt the taxis, but without delay proceeded to the operation. On account of the feebleness of the pulse, chloroform was not administered. The sac of the hernia having been exposed by an incision along its inner side, and the stricture divided, ineffectual attempts were made to reduce the tumour without opening the sac, which was accordingly laid open. Together with a large mass of omentum, a strangulated knuckle of intestine, about the size of a walnut and quite black, was now brought into view. Its surface was tense, smooth, and polished, and, as it did not appear to be gangrenous, Mr. Stanley returned it into the abdomen, leaving the omentum in the sac to which it was adherent. The ordinary dressings having been applied, the patient was sent back to bed.

Dec. 30. She has passed a tolerably quiet night, undisturbed by vomiting, but this morning the abdomen is tender and tympanitic, and her aspect is sunken and very anxious. Pulse extremely feeble. Hirud. x. abdomini.

℞. Pil. sap. co. c. opio. gr. v. 4tis horis.

Jan. 2. The pills have been regularly continued up to the present time, (eighteen grains of opium in three days), and with apparently the best effect; the symptoms of peritoneal inflammation have gradually yielded, and her strength has much improved. To-day the bowels have acted twice quite spontaneously, for the first time since the operation.

4th. The wound has not yet commenced to close; to-day there is a discharge from it of *fluid intestinal contents*. Her general health is improving; she takes a nourishing diet, with beef-tea and wine.

21st. The discharge of fæces from the wound which continued profuse for two weeks gradually declined, and has now quite ceased to flow, and the wound looks healthy. She has during this time had several evacuations per anum, but by far the greater part of the intestinal contents have passed through the opening in the groin.

Feb. 9. The patient is going on extremely well, and the wound is nearly closed. The bowels act regularly by the natural passage.

On March 16 the patient left the hospital quite well in every respect, the wound being healed, and a truss adjusted.

Inasmuch as the space of six days elapsed before the diseased intestine gave way, and as in the interval the bowels had acted naturally, it may fairly be inferred, that, at the time of the operation, the vitality of the strangulated portion was not hopelessly reduced. We have noted that it was not collapsed, and that it retained its polished, smooth appearance. Very possibly, had the restorative vigour of the patient been

greater, the ulterior processes, which resulted in sloughing, might have been arrested, and the gut enabled to resume its functions, and taking this view the prolonged subsequent history would seem quite to justify the course pursued by Mr. Stanley. It is no light matter to needlessly puncture intestine because it is black, or even to leave it exposed in the wound,—a proceeding which will certainly increase the danger of gangrene. Looking, then, at all the various risks, and estimating fairly the various means of forming a correct prognosis, it is a thing quite to be expected, that, in some cases, the probabilities may be so nicely balanced, that the judicious surgeon may return portions of bowel, concerning which he does not feel absolutely certain that they are not irrecoverably damaged. Just such a case we believe the preceding to have been. To return gangrenous intestine is, of course, a proceeding replete with danger, on account of the probability of the escape of fæces into the peritoneal sac. If, however, time be allowed for the exertions of the *vis conservatrix naturæ* before the diseased parts separate, this accident may, as the result of the above case proves, be obviated by the preparatory glueing together of the intestine and the abdominal wall at the part nearest to the external opening, so as to provide means of free escape from the irritating fæcal matters. In addition to the above point of interest—the successful treatment of traumatic peritonitis by opium, and the spontaneous closure of an artificial anus,—this case also illustrates the practice of leaving adherent omentum in the sac of the hernia. The mass left was of very considerable size, and, at the time of operation, much congested, though not in a condition at all approaching to gangrene. No sloughing occurred subsequently, but the whole sac suppurated very freely, a considerable portion of the discharge being probably derived from the exposed serous membrane. Under this process, the omental mass diminished much in size, and ultimately became consolidated with the surrounding parts.—*Med. Times and Gazette, April* 30, 1853, *p.* 446.

85.—CASES ILLUSTRATING THE USE OF CHLOROFORM IN THE TREATMENT OF HERNIA.

By W. S. Savory, Esq., Tutor at St. Bartholomew's Hospital.

[The first case is one of oblique inguinal hernia, having the following appearances.]

A tumour, about the size of a common egg, extends from the right internal ring, along the canal, into the scrotum; it is firm and tense, and conveys a slight impulse on coughing. He complains of pain when the tumour is handled, but there is no tenderness in the neighbouring parts, or in the abdomen generally. A very small swelling in this region was accidentally discovered about two months ago; it soon disappeared under pressure, but has since repeatedly returned. He has never worn a truss. The present tumour appeared about 2 a.m.; he was making no exertion at the time. Not being able to return it as usual, he applied to a medical man. He was placed in a bath, and the taxis employed for fifteen minutes without success. Under these circumstances, it was determined

to remove him at once to the operating theatre, and, while under the influence of chloroform, to repeat the attempt at reduction, and if unsuccessfully, to operate without further delay. Chloroform having been freely administered, the hernia was reduced without much difficulty. In a few days he left the hospital, wearing a truss.

[The second is a case of congenital inguinal hernia in a man aged 42. It is thus described.]

A firm and tense tumour extends from the internal ring, along the spermatic cord, into the scrotum, of irregular shape, and somewhat constricted about the middle. An impulse is distinctly felt on coughing, but the tumour and the parts around appear very tender. He has "had a rupture" ever since he can remember, but has always been able to reduce it. He has never worn a truss. About four hours ago, the tumour appeared of unusual size, without any apparent exertion, and all attempts at reduction failed. He was placed in a bath (temp. 100°), and taxis employed, without success. He was then removed to bed, and placed completely under the influence of chloroform. The taxis being repeated, in about three or four minutes the hernia was reduced, the tumour almost suddenly disappearing with a gurgling sound. A bandage was applied, and he was discharged on the following day.

[The third case, one of oblique inguinal hernia in a man aged 31, by trade a smith, was admitted Nov. 1st, 1851, at nine p.m.]

A firm, elastic tumour, about the size and shape of a common pear, communicating an impulse on coughing, but not tender to the touch, extends from the left inguinal ring into the scrotum. He first perceived a swelling in this region nine years since, after great exertion, during which he thinks he strained himself. It disappeared under pressure. It was repeatedly returned, but he has never had any difficulty in reducing it. He has generally worn a truss. Yesterday, about seven a.m., (twenty six hours ago), he incautiously lifted a heavy weight, not wearing the truss; the rupture descending, became suddenly larger and more tense than usual, and he was unable to return it. About twelve hours since, he took a dose of croton oil, which produced two scanty evacuations, the last occurring about three p.m. Previously to his admission, taxis had been persevered in for considerable time by a medical man. He was at once placed in a bath, (temperature 98°), and after remaining in it for fifteen minutes, taxis was employed for ten minutes without producing any effect upon the tumour. The symptoms not being urgent, he was placed in bed, and ordered pil. saponis c. opio gr. x.

Nov. 2, ten a.m. He has passed a good night, having slept comfortably. There are no fresh symptoms; the bowels have not acted. Having been placed completely under the influence of chloroform, the hernia was readily reduced.

Nov. 6. He has been discharged, wearing a truss.

[In another case of oblique inguinal hernia, produced by slipping while carrying a load, although the warm bath and taxis failed in reducing it, yet after some time and trouble, it yielded under the influence of chloroform. A week afterwards the patient was discharged.]—*Med. Times and Gazette, April* 30, 1853, *p.* 458.

[The alleviation of pain is by no means the only recommendation for the use of chloroform in cases of hernia. In many now recorded, the use of the anæsthetic prevented the operation, by enabling the reduction to be effected.]

When a patient is fully under the influence of chloroform, he is in a condition very favourable for the reduction of an hernia by taxis. All the muscles are completely relaxed, and pain being suspended, no resistance is made to the necessary manipulation. We gain, at once, indeed, many of the advantages belonging to other and older plans of treatment, *e.g.*, tobacco enema, venesection, &c., without any corresponding evils. The chief good effects of the warm bath are here also produced; and this is the more important, as this valuable adjunct in the treatment of hernia—except in hospital practice—is often only obtained with great difficulty, and after considerable delay. Indeed, it appears from numerous observations, that the use of chloroform in the treatment of hernia is attended with decided advantages over all other means which can be employed. For example, in three of the four cases related, chloroform succeeded after the warm bath (hitherto considered as our most useful auxiliary) had failed. Doubtless, the value of chloroform, under these circumstances, is mainly dependent upon the complete muscular relaxation induced; and this is a point to be particularly attended to. Every surgeon is aware, how forcibly attempts at reduction by taxis are opposed by the violent, in some cases almost spasmodic-contraction of the abdominal muscles; indeed, the same cause that expels the intestine from the abdomen, still acts to prevent its return. No means with which we are at present acquainted are equal to chloroform in producing complete muscular relaxation without danger or delay. But the objection to its employment in cases of hernia are not to be overlooked, and the more so, as by judicious management, they may be often overcome. The two principal are (1) the violent muscular exertions which often occur during its administration, and (2) the sickness which sometimes accompanies returning sensation. The former of these evils may generally be avoided by the observance of due care in its administration. If given very gradually at the commencement, and if no attempts are made to compel the patient to inhale, in spite of alarm, and the chloroform be pure, and if, subsequently, when the muscular actions which generally precede total insensibility commence, its administration be effectually continued without intermission or delay, we shall generally succeed in producing the full effects of chloroform, without the severe struggling which frequently occurs. The second evil, sickness, is much less within our control; the condition of the stomach is generally the cause, sickness usually follows when chloroform is administered shortly after a meal. We can only look to the quality of the chloroform; this and many other effects. as coughing, &c., often depending on slight impurities.

It has been stated, that the inhalation of ether produces more decided muscular relaxation, and is, therefore, preferable, in cases of hernia and dislocation, to the use of chloroform. Now, ether is much less powerful, and, therefore, much less rapid in its action, than chloroform; consequently, when inhaled, it enters the system more gradually. This may explain the more decided effects which are said to result from

the use of ether; and it reminds us of the advantage to be obtained from the gradual and cautious administration of chloroform, more especially at the commencement of the process. The difference observed between the effects of ether and chloroform appears to be, in a great measure, due to their relative strength.

From the observation of a considerable number of cases, it appears to me, that many of the unpleasant complications, especially struggling, which often attend the administration of chloroform, are, to a great extent, dependent on the instrument employed. In this, as in most cases, the simplest plan is the best. It seems that chloroform can be administered in every respect most advantageously by means of a handkerchief or a piece of lint. All instruments appear to be more or less objectionable, perhaps in direct proportion to their complexity. The prejudice which generally exists against the use of the handkerchief arises from its supposed danger. In the hands of a careless or incompetent person, some of the instruments which have been contrived may possibly be employed with less risk of danger, but such persons are not justified in administering chloroform under any circumstances, and, with ordinary care, the use of the handkerchief is at least as safe as the employment of a more complicated instrument. These opinions are held by some of the most eminent surgeons. Another objection urged against the use of the handkerchief is, that chloroform is wasted in this way. With a little care this may be, in a great measure avoided, and even allowing this objection its full force, it is but a trifling one. It has been said, that when chloroform is administered on a handkerchief, so much escapes that the atmosphere of the room becomes unpleasantly impregnated. This may happen when the exhibition is prolonged for some considerable time, but under such circumstances the same objection applies to instruments. It has also been objected to the handkerchief, that we cannot estimate so exactly the quantity of chloroform inhaled, as some is lost by evaporation. This objection applies equally to all instruments from which the vapour of chloroform can escape. But the chief point to be attended to in the administration of chloroform is not the quantity consumed, but the effects produced. Women and children are often alarmed by the sight of any instrument; however simple it may really be, it appears to them mysterious. This is no trivial objection. They will readily inhale chloroform when merely dropped upon their handkerchief. So far as my observations extend, many of the disagreeable circumstances which often occur when an instrument is employed, such as struggling, shouting, coughing, congestion of the face, &c., seldom arise when a handkerchief is used. In cases of hernia, more especially, this is a great point to be attended to.

It is important that the administration of chloroform be continued till muscular relaxation is fully induced before taxis is employed. If attempts at reduction are made while the muscles are tense, more harm than good results from its use. On the other hand, we must be mindful not to continue our efforts at reduction, during the insensibility produced by chloroform, for an undue length of time. The patient, being unconscious, can give us no warning by his complaints that we are pressing our attempts at reduction too far, and, in our anxiety to succeed, we may overlook the time and force employed.

If such attempts at reduction are unsuccessful, should the operation, supposing it be deemed necessary, be at once performed without allowing consciousness and sensibility to intervene? The advantage of this plan is, that we spare the patient a second administration of chloroform; the objection to it is, that we must then prepare our patient beforehand for the worst, and thus sometimes needlessly alarm and distress him. Perhaps the circumstances of the case may be our best guide. When there is a fair chance of success we may attempt reduction under chloroform without distressing him by the idea of an operation; when, on the other hand, our chances of success by taxis are small, we may prepare him at once for the worst, and employ chloroform as a preliminary to the operation, if that should become necessary.

The good effects derived from chloroform are not at an end when an operation is required. The pain and consequent terror of this proceeding is abolished by its use. But the preservation of life is more important than the annihilation of pain, and perhaps the happiest effects of chloroform in hernia are witnessed in the results which often follow its administration. It would perhaps be difficult to mention any event which the surgeon hails with greater pleasure, after an operation for hernia, than the supervention of natural sleep. Indeed, to procure sleep after an operation is often an indication of no mean importance to be fulfilled. Calm and prolonged sleep is often the precursor of a rapid recovery. It may be said, indeed, that sleep thus appears beneficial because it only occurs in the absence of any bad complication; but after making every allowance for this fact, many cases most unequivocally demonstrate the advantages of sleep, after an operation for strangulated hernia. Such sleep often follows when chloroform is employed. It is frequently promoted, nay sometimes induced by it. The patient does not appear to awake from the effects of chloroform, and a natural sleep without the intervention of consciousness, seems to succeed the artificial one.—*Med. Times and Gazette, June* 4, 1853, *p.* 586.

86.—*Strangulated Femoral Hernia—Removal of a large Mass of Omentum—Peritonitis—Sloughing of the Sac—Recovery.* Under the care of Mr. Erichsen.—[This patient, a female, aged 67, was admitted into University College Hospital Jan. 11, 1853, at 9.30, a.m. All efforts by the taxis, even with the aid of chloroform, failing to reduce the hernia, the sac of the hernia was laid open. A large lump of omentum presented itself, and, after a little search, a tight stricture was divided, surrounding a small knuckle of intestine, and the reduction accomplished: but the question remained as to what was to be done with the omentum.]

Conclusively opposed to the idea of returning it were the circumstances, that it was very large, much congested, adherent to the sac, and had probably been down for a long time. If left in the wound, sloughing would probably ensue, and induce great constitutional irritation. Mr Erichsen accordingly determined to remove it, and to adopt, according to his custom in such cases, the plan of ligaturing the whole constricted

neck of the tumour, rather than each vessel singly. For this preference he alleged as a reason, that it was very desirable to prevent the portion left behind from passing up into the abdomen, which might be much more easily accomplished by one large ligature than several small ones. A piece of whipcord was accordingly passed round it, as close as possible to the femoral ring, and the lower portion, having been cut off, was gently separated from the sac, to which it adhered, and removed. The end of the cord was turned up on to the abdomen, and there fixed by means of a strip of plaster, so as to retain the divided omentum in place. The sac, which was very large, was next plugged with sponge, and, the wound having been covered with wet lint, the patient was sent back to bed. Capt. vin. opii ♏xxv. statim.

The portion of omentum cut away was afterwards found to be six ounces in weight.

At two p.m., there were symptoms of commencing peritonitis; the belly was tympanitic, and slightly tender; pulse 90, soft; tongue moist, and thinly furred; knees a little drawn up. Hirud. xij. abdom.

℞. Hydr. chlorid. g. ij.; pulv. opii gr. ss.; 4tis horis sumend.

Jan. 12, one, a.m. Hirud. xxiv. The pain in the abdomen continuing with but little improvement, the same number of leeches were again applied at noon, and at midnight a blister was ordered to the abdomen. Tinct. opii ♏ xxx. horâ somni sumend.

13th. Pulse 120, sharp and hard; abdomen tympanitic and tender; she is very restless, and appears to be in great pain. Hirud. xxiv. To continue warm fomentations to the abdomen.

16th. A profuse diarrhœa commenced yesterday, in other respects she is a little improved.

℞. Morph. acet. gr. j.; sacchari, gr. x.; 6tis horis sumenda, cum sp. vin. gallic. ℥j.; et conf. aromat. gr. x. A starch enema to be administered.

17th. There is still tenderness over the whole belly, which is also tympanitic; she lies, however, on her left side, and the knees are not drawn up; pulse very weak; bowels not open; tongue dry and furred.

18th. The ligature from the omentum came away to-day; the interior of the sac, which has throughout secreted a very unhealthy discharge, is in a sloughy condition, but the destruction does not involve any part of the edges of the skin; the abdomen is now flaccid and free from tenderness; pulse 26, and of much better power. Mr. Erichsen ordered a lotion of the chlorinate of soda to be freely applied to the interior of the sac, and over the whole a bread poultice. The powders were suspended yesterday.

19th. Much better; the sloughs are separating, and the wound is granulating healthily. Pulse 112, soft, and of fair power. From this date, progressive improvement took place, and she was discharged quite well on February 28th.

[The notes of both this and the following case are by Mr. Griffith. The *Second Case* was one of strangulated congenital hernia, in which a large mass of omentum was also removed, though it was adherent to the testis. This case was likewise under the care of Mr. Erichsen.

The patient, a man aged 35, was admitted January 7th, at 9, p.m. From a child he has had occasionally a large protrusion, but it had always been readily reduced. He had worn a truss, but it was inefficient. From the 5th of January, however, the tumour had not been reduced, and he had suffered from violent vomiting and constipation. The size of the tumour was that of two fists, long and ovoid in form, in the left side of the scrotum. The taxis and chloroform having failed, the operation was proceeded with.]

Having exposed the sac, and divided the stricture, he attempted to effect reduction without opening the former, but, in doing so, it gave way under his hands at the lower part, where it was excessively thin, and a large mass of thickened omentum protruded. The omentum was found to be closely adherent to the testicle. Just within the neck of the sac, and almost concealed by the rest of the tumour, was a knuckle of deeply-congested intestine, of a chocolate-brown colour, but glistening, and otherwise healthy. The stricture was now further divided in the usual direction, and the coil of bowel carefully replaced and retained in position by pressure with the hand over the internal ring. Mr. Erichsen next applied a ligature of whipcord to the neck of the omental protrusion; and, having divided its adhesions to the testis, it was then cut away and removed. This omentum was not only indurated and thickened, but a good deal congested. Mr. Erichsen alleged as his reason for removing it, that if left, it would, from its size, and from the probability that some of it had been a very long time there, almost certainly slough. The wound having been dressed as in the preceding case, the patient was returned to bed, and had administered two grains of opium in the form of pill.

On the morning of the 8th, there was much tenderness over the whole abdomen; and the exposed testicle was acutely inflamed.

Hirud. xviii. ℞. Opii gr. ss.; calomel gr. ii.; 4tis horis sumend.
Fomentations to the whole abdomen.

On the 9th he was somewhat better; and by the aid of a simple enema the bowels were freely opened.

10th. He was so much improved, that the pills were discontinued.

11th. Abdomen distended, but not very tender; the testicle is still swollen and painful; appetite good; bowels open; tongue moist.

18th. The sac has throughout been in a very unhealthy condition, and the whole scrotum is now much swollen and discoloured. As the pus, which was of a dirty grumous character, appeared to lodge in the lower parts, Mr. Gamgee, the home-surgeon, made an extension of the wound lower down, in order to permit of its more free escape.

20th. The patient, as regards his general health, is doing well; the scrotum is injected with red wash. Mr. Erichsen made a counter opening in its lower portion, in order yet further to obviate the tendency of the pus to bag.

21st. During the night there was a sharp hemorrhage from the edges of the cut made yesterday, which, however, ceased spontaneously.

Feb. 8th. Steady improvement; all the slough has separated, and the wound is granulating healthily.

About a fortnight later, the man was discharged quite well.—*Med. Times and Gazette, April* 30, 1853, *p.* 446.

87.—*Reduction of a Scrotal Hernia which had been for nearly six months irreducible.*—Under the care of JOHN HILTON, Esq., at Guy's Hospital.—[Although this hernia had existed in an aggravated form for above six months, and all attempts to reduce it had failed, yet, with the exception of a dragging sensation in the abdomen and back, no symptoms of strangulation had at any time manifested themselves.]

On examination, there was found in the left scrotum a large, moveable, irregularly nodulated mass (omentum), which was soft, flaccid, and free from tenderness. Nothing like intestine could be felt. The neck of the tumour at the external abdominal ring appeared to be tightly constricted. The bowels were ascertained to have acted regularly each day. Having made careful and persevering, but ineffectual attempts to effect the reduction of the tumour, Mr. Hilton directed—1st, That the man should observe an undeviatingly recumbent posture. 2ndly, That he should have solid food, with not more than half a pint of fluid in twenty-four hours. 3rdly, That a bladder of ice should be kept constantly applied to the scrotum, the latter being elevated on a cushion placed between the thighs. 4thly, That a draught, containing sulphate of magnesia and colchicum wine should be administered three times daily. Mr. Hilton remarked, to those present, that to a young man who had earned his livelihood by hard labour, it was a matter of very great importance, to be relieved, if possible, of such an affection as the present, which, apart from the inconvenience necessarily attendant on its bulk, would perpetuate a liability to the occurrence of strangulation. He pointed out, that the important obstacle to reduction was probably offered by the loaded condition of the bloodvessels of the protruded part, and that, consequently, the indications for treatment were—1st, To decrease the quantity of the circulating medium generally, as far as might be done without unduly depressing the vital powers; and, 2ndly, by local means to constringe and unload the congested vessels of the incarcerated omentum. The one was to be accomplished by purgation, diuresis, and abstinence from fluids; the other, by the recumbent posture and the application of pressure and of cold. With respect to the last mentioned agent, Mr. Hilton further remarked, that, in the case of tumours within the scrotum, the use of cold, by exciting constant and powerful contraction of the dartos, insured the application of the best and most uniform kind of pressure which could possibly be exerted. The effect of purgation was also extremely valuable, since not only did it unload the vascular system generally, but that part of it especially involved in the existing lesion, the omental veins being, with those of the intestines, tributary to the vena porta. It was just possible, also, that, by keeping the stomach and transverse colon comparatively empty, the contractions of those organs, to both of which the omentum is attached, might exert some little influence in tending to drag upwards into the abdominal cavity the displaced portion of omentum. To return to our case. After the afore-mentioned treatment had been rigidly pursued for a few days, it was noticed, that the man's belly had lost its rounded contour, and become pinched in and narrow; the tumour, also, had diminished in size, and felt soft and loose, having lost its plump and definite form. The bowels had been freely purged.

On the 28th, Mr. Hilton again examined the tumour, and, with very slight pressure, succeeded in passing it up to the abdomen.

On the 30th, the man was discharged, quite free from all the inconveniences of his complaint; and, by wearing an efficient truss, the hernia had not again protruded.—*Medical Times and Gazette, May* 28, 1853, *p.* 554.

88.—*Operation for Hernia by the Small Subcutaneous Incision.* Under the care of J. Hilton, Esq.—[No doubt the much less mortality in hernial cases is owing to a great extent to the present improved method of operating in them. The following, at Guy's Hospital, is a good example. The patient, a female, aged 69, had suffered from severe symptoms of strangulated femoral hernia for thirty-six hours. Being a thin lax-fibred woman, the relations of the swelling were easily felt.]

Having failed in his attempts at reduction by the taxis, Mr. Hilton at once proceeded with the operation for the division of the constriction. The tumour being held to the outer side by Mr. Maunder, one of Mr. Hilton's dressers, an incision about an inch long was made through the skin and cellular tissue, on the inner side and somewhat below the neck of the sac; a director was next introduced, and by a little care insinuated within the constriction external to the sac. With a small blunt-pointed bistoury the stricture was then notched, after which the bowel returned readily into the abdomen. With the exception of a small portion, not so large as the tip of a finger, the sac had not been seen by the operator. The edges of the wound were at once brought together, and covered by a strip of plaster. All urgent symptoms were at once relieved, and the patient slept fairly during the following night. On the third day, the bowels acted spontaneously, and the plaster having accidentally got rubbed off the wound, the latter was found to have healed completely by the first intention, the cicatrix being, indeed, scarcely perceptible. The woman might be considered as quite well.—*Med. Times and Gazette, July* 30, 1853, *p.* 110.

89.—ON WOUNDS OF THE INTESTINES.

By G. J. Guthrie, Esq., F.R.S.

When an incised wound in the intestine is not supposed to exceed a third of an inch in length, no interference should take place; for the nature and extent of the injury cannot always be ascertained without the committal of a greater mischief than the injury itself. When the wound in the external parts has been made by an instrument not larger than one-third, or from that to half an inch in width, no attempt to probe or to meddle with the wound, for the purpose of examining the intestine, should be permitted. When the external wound has been made

by a somewhat broader and longer instrument, it does not necessarily follow that the intestine should be wounded to an equal extent; unless it protrude, or the contents of the bowel be discharged through the wound, the surgeon will not be warranted in enlarging the wound in the first instance, to see what mischief has been done. It may be argued that a wound four inches long has been proved to be oftentimes as little dangerous as a wound one inch in length; yet most people would prefer having the smaller wound, unless it could be believed that the intestine was injured to a considerable extent. Few surgeons even then would like to enlarge the wound, to ascertain the fact, unless some considerable bleeding, or a discharge of fæcal matter, pointed out the necessity for such an operation.

If the first two or three hours have passed away, and the pain, and firm but not tympanitic swelling in the belly, as well as the discharge from the wound, indicate the commencement of effusion from the bowel, or an extravasation of blood, an enlargement of the opening alone can save the life of the patient. The external wound should be enlarged, the effused matter sponged up with a soft moist sponge, and the bowel or artery secured by suture. When a penetrating wound, which may have injured the intestine, has been closed by suture, and does not do well, increasing symptoms of the inflammation of the abdominal cavity being accompanied by general tenderness of that part, with a decided swelling underneath the wound, indicating effusion beneath, the best chance for life will be given by re-opening the wound. It is a point in surgery, which a surgeon should contemplate in all its bearings. The proceeding is simple, little dangerous, and under such circumstances can do no harm.

When the wounded bowel protrudes, or the external opening is sufficiently large to enable the surgeon to see or feel the injury by the introduction of his finger, there should be no difficulty as to the mode of proceeding. A puncture or cut, which is filled up by the mucous coat, so as to be apparently impervious to air, does not demand a ligature.

An opening which does not appear to be so well filled up as to prevent air and fluids from passing through it, as such wound cannot usually be less than two lines in length, should be treated by suture. When the opening is small, a tenaculum may be pushed through both the cut edges; and a small silk ligature passed around, below the tenaculum, so as to include the opening in a circle, a mode of proceeding I have adopted with success in wounds of the internal jugular vein, without impairing its continuity; or the opening may be closed by one, two, or more continuous stitches, made with a very fine needle and silk thread, cut off in both methods close to the bowel, the removal of which from the immediate vicinity of the external wound is little to be apprehended under favourable circumstances. The threads or suture will be carried into the cavity of the bowel, as has been already stated, if the person survive; and the external part of the wounded bowel will either adhere to the abdominal peritoneum, or to one or other of the neighbouring parts.

When the intestine is more largely injured, in a longitudinal or transverse direction, or is completely divided as far as, or beyond the mesentery, the continuous suture is absolutely necessary.

When the abdomen is penetrated, and considerable bleeding takes place, it is necessary to look for the wounded vessel. When the hemorrhage comes from one of the mesenteric arteries, or from the epigastric, the wound is to be enlarged until the bleeding artery is exposed, when ligatures are to be placed on its divided ends, if they both bleed. I have seen the epigastric artery tied several times with success.

A Portuguese cagador on picquet was wounded at the second seige of Badajos, in a sally made by some French cavalry. He had three or four trifling cuts on the head and shoulders, and one across the lower part of the belly on the right side. He bled profusely, and when brought to me had lost a considerable quantity of blood, which came through a small wound made by the point of a sabre. This wound I enlarged until the wounded but undivided artery became visible; upon this two ligatures were placed, and the external wound was sewed up. The peritoneum was opened to a small extent, but the bowel did not protrude, and the patient (not being an Englishman, and not, therefore, so liable to inflammation) recovered after being sent to Elvas.

A soldier of the same regiment, cut down at the same time, died as he was brought into camp, having been severely wounded in the chest and the abdomen. He was said to have died from hemorrhage, from a wound in the belly, two inches in length, made by one of the long-pointed swords of the French dragoons. I had the curiosity to enlarge the wound, and found one of the small intestines had been cut half across, another part injured, and that the blood had come from an artery which had been opened by the point of the sword in going through the mesentery, which wound had caused his death.

The recollection of these and of other nearly similar cases causes me to say that when hemorrhage takes place from within the abdomen the wound should be enlarged; and that if an artery in the mesentery, or in any other place which can be got at, should be found bleeding, a very fine silk ligature should be placed, if possible, on each side of its divided extremities, and cut off close to the knot, the external wound being afterwards accurately closed. This is a point of practice to which future attention is directed.

When a musket-ball penetrates the cavity of the belly, it may pass across in any direction without injuring the intestines or solid viscera. It usually does injure one or the other, and it has been known to lodge without doing much mischief. The symptoms are generally indicated by the parts injured, although in all the general depression and anxiety are remarkable; their continuance marks the extent, if not the nature of the mischief.—*Lancet, April* 30, 1853, *p.* 399.

90.—CASE OF INTESTINAL OBSTRUCTION FROM DISEASE OF THE RECTUM,

TREATED SUCCESSFULLY BY OPENING THE DESCENDING COLON IN THE LEFT LOIN.

By Alfred Baker, Esq., Surgeon to the General Hospital, Birmingham.

[The patient in this case was a tall spare woman, aged 62. Mr. Baker saw her on the 15th August, 1849. She had great pain in the lower

half of the body, with severe retching and some vomiting. These symptoms were supposed to arise from her eating some indigestible food. Calomel, purgatives, and enemata were prescribed, by which the symptoms were relieved. On the 1st October, 1849, she had a worse attack of the same kind, and complicated with double femoral hernia. With appropriate treatment she again recovered. On the 9th November, of the same year, on being again sent for, Mr. Baker found many symptoms of intestinal obstruction present, and on examining the rectum, which he was led to do from the deep-seated pain in the sacrum, and other symptoms, Mr. Baker says—]

I found that, within reach of the tip of the finger, the bowel was obstructed by a firm growth, occupying its whole circumference: this had an uneven surface, and a dense consistence; near its centre was a small fossa, which appeared to be the lower orifice of the contracted portion of the canal. I attempted to dilate this opening with the finger, but its distance from the anus rendered this proceeding useless, and the slightest pressure from below pushed the strictured part upwards. The uterus was quite healthy, and could be moved independently of the diseased bowel. As the stricture did not seem to produce complete occlusion, she was ordered to take two pills every fourth hour, composed of five grains compound extract of colocynth and five grains of extract of conium; and an enema was given with the ordinary syringe, in the hope that some of it would pass through the contracted canal, and thus liquefy the accumulation above. Next day, finding that the enema had been expelled, after a few minutes' retention, without any fæces, and that the symptoms were unabated, I attempted to pass a small œsophagus-tube, and succeeded in penetrating the stricture for a short distance, but could not get through it; some fluid was, however, injected along the tube, all of which did not return. On the following day, finding that a little dark-coloured liquid stool had been voided, the tube was again tried; and a quarter of a drop of croton oil was added to each dose of the pills. By perseverance in this treatment, the bowels were, after two or three days, partially unloaded; and I hoped that time would now be gained for the dilatation of the stricture, with which object bougies of small size were employed, but with only a small amount of success. In a few days constipation returned, accompanied by symptoms of peritoneal inflammation. Her pulse rose to 100, she had loss of appetite, thirst, dry tongue, heat of skin, with short and hurried breathing. The abdomen, which had been softer and smaller, again became tense, tumid, and tender, and her suffering was increased by very slight pressure upon it. She now took two grains of calomel with the fourth of a grain of opium every four hours; croton oil liniment was rubbed freely over the abdomen, and hot fomentations were assiduously applied. Under these measures she improved; the symptoms of peritonitis disappeared, the size of the abdomen was lessened, and diarrhœa shortly came on. The diarrhœa was not controlled by any stringent, but in a few days spontaneously subsided.

[On the 17th January, the condition of the patient was much aggravated. The rectum was completely occluded: therefore, he continues,]

At eight o'clock, p.m., January 23rd, 1850, in the presence of Dr.

Heslop, Mr. Hale, and Mr. James, I opened the descending colon in the left lumbar region, where it is not enveloped by the peritoneum. The patient being laid upon her face in bed, and her truss removed, lest it should interfere with the operation, an incision was made transversely across the left loin for five inches, commencing about two inches from the spine and carried outwards midway between the last rib and the crest of the ilium. By this the skin and subcutaneous cellular membrane were divided; after which the latissimus dorsi, quadratus lumborum, and the lumbar fascia, were in succession cut through. The loose fat, which in persons who are not very much emaciated always exists in this situation, projected at the bottom of the wound, and an attempt was made to push it aside, so as to allow the bowel to come forward; this proceeding, however, failed, and it was necessary to remove several large masses of fat by the knife before the colon became visible. At first the intestine did not project, and the finger was passed into the wound to ascertain the cause: the cellular connections of the colon with the loin were thus broken down, and, on the the withdrawal of the finger, the intestine distinctly projected at the bottom of the wound, having a pale, leaden, and greenish hue. It was next attached by four sutures to the skin at the edges of the first incision, and was then opened by a scalpel to the extent of an inch between the threads. A rush of most offensive air took place immediately that the bowel was punctured, and a stream of chocolate-coloured fæces, of the consistence of thin gruel, welled up from the opening. This continued to flow until more than a large wash-hand basin had been filled, when it ceased. The wound was then covered with pledgets of linen dipped in warm water; and a thickly-folded sheet was placed under the patient, and she was turned upon her back in bed, with an inclination towards the left side, so as to favour the escape of matters from the wound. She took a grain of opium immediately, and was supplied with small quantities of beef-tea, gruel, and milk. I should, perhaps, remark that chloroform was not administered in this case, on account of the vomiting, which continued even during the operation. There was very little bleeding, and no vessel required a ligature.

January 24th. Feels greatly relieved by the escape of stercoral matter through the wound. This has not been incessant, but has recurred about every half-hour through the night, and has always been preceded by pain in the bowels. Has had no sickness since the operation; has had some sleep, and has been able to take some liquid nutriment frequently. The expression of her face is still anxious, and she seems to be depressed by the frequent recurrence of colic-like pain. Her breathing is easier; her pulse 106, sharp, but stronger than yesterday; her skin is warm; her tongue whitish and moist; her abdomen is somewhat tender, though much lessened in size. She complains of smarting in the wound, which looks well, and is free from inflammatory action.

25th. Took a grain of opium again last night, and slept tolerably. The bowels act through the lumbar aperture about every hour, the approach of the evacuation being indicated by a griping or pinching pain, accompanied by flatulent rumblings. The whole of the fæcal accumulation has not yet been voided, but is escaping, mixed with fresh bilious secretion. To-day she had a scanty discharge per anum, composed

chiefly of mucus, but having a little fæcal matter mixed with it. Her pulse has fallen to 90, her tongue is cleaner, and her appetite is increased. The wound looks well.

[On April 18th the patient is stated to have not one bad symptom, and from this time to the end of two years, she remained in the enjoyment of perfect health. Three months ago, however, serious symptoms began to arise, and at this period the condition of the bowel is thus described:—]

The rectum remained much the same as at the time of the operation, the bulk of the thickening being perhaps a little increased. Since that time she has suffered an attack of sub-acute peritonitis, and her legs have become œdematous. The abdomen also has increased in size; and her symptoms indicate the probability that the morbid growth in the pelvis which closed the rectum has extended into the abdomen, and is now producing injurious effects upon the contiguous structures.

[A postcript is added to this case, in which it is stated that after the last report the dropsical symptoms rapidly increased, and the patient died on the 10th of February, 1852.]

When the body was examined, three or four pints of turbid serum escaped from the cavity of the abdomen. The peritoneum exhibited the effects of peritonitis; the intestines were glued together, to the omentum, and to a tumour as large as a man's head, which appeared to emerge from the pelvis. This tumour arose from the right ovary, and consisted principally of cerebriform cancer. A section of it displayed grey and white brain-like matter, with patches of ecchymosis here and there. In some parts of it there were cysts filled with the yellowish-brown glue-like matter of colloid cancer, and other cysts from which serum had escaped. In the pelvis another tumour as large as an orange was found. This was the left ovary, in which the same morbid degeneration was going on as in the right. The liver and the mesentery also contained similar deposits. The uterus was healthy. The colon was healthy throughout; below the opening in the left lumbar colon made by the operation, the sigmoid flexure and the rectum were larger than the natural calibre, and contained some ounces of dark-coloured scybalæ. At a distance of about three inches from the anus the rectum was suddenly and completely closed by a dense firm fibrous structure not more than a quarter of an inch in extent; below this part the canal was again pervious down to the anus, but was contracted and empty. The coats of the rectum immediately above the stricture had a healthy appearance, though softer and more lacerable than usual. The artificial opening into the colon in the loin was carefully examined. Its shape was oblong, and its cutaneous margin had a firm cordy feeling. The structures surrounding this orifice, which had given so much trouble by its tendency to contraction, consisted of the skin and a dense fibro-cellular membrane. The muscles and fascia of the loins were all traced to within three-eighths of an inch of the margin of the aperture, where they became blended together, and terminated in a mesh of strong interlacing fibro-cellular fibres, which were intimately connected both with the colon and the integument around the artificial opening.—*Medico-Chirurg. Transactions*, 1852, *p.* 226.

91.—TWO CASES OF INTESTINAL OBSTRUCTION,

IN WHICH THE OPERATION FOR THE FORMATION OF AN ARTIFICIAL ANUS WAS PERFORMED; ONE IN THE ASCENDING, AND THE OTHER IN THE DESCENDING COLON.

By William James Clement, Esq., Shrewsbury.

[On the 8th of October, 1841, in consultation with Mr. Dovaston, Mr. Clement visited Mrs. Gough, aged forty-seven, labouring under symptoms resembling those of strangulated hernia. For 14 days no evacuation from the bowels had been obtained in spite of various purgative remedies and enemas. A drop of croton oil every two hours along with turpentine enemas were now prescribed. No relief whatever was obtained, and at a subsequent meeting, says Mr. Clement:]

I carefully examined all the parts likely to be the seat of hernia, and also the rectum, which freely admitted O'Beirne's tube to the extent of fourteen inches. A large quantity of tepid water was injected, but it returned almost colourless; and as the patient was able to retain several pints, for some time I concluded that the cause of obstruction was not in the descending part of the colon.

The vomiting had been very distressing since Friday night. If only a table-spoonful of beef-tea was swallowed, it was almost instantly rejected with double the quantity of liquid feculent matter. The abdomen was enormously distended; the hiccough very frequent; and the state of the pulse indicated the case as being nearly hopeless. Under these circumstances I suggested to Mr. Dovaston the propriety of affording the patient a chance for her life by making an artificial anus in the loin. The nature of the operation was fairly explained to her, with no concealment of the great uncertainty of its success. It was offered as a last resource, and freely accepted.

On carefully percussing the abdomen, I found that it yielded a clear tympanitic sound over its whole surface, except on the right inguinal and iliac regions. Here the sound was dull. When comparing the two sides of the belly, the right was evidently fuller and more distended than the left; and this difference was more apparent in the right lumbar region than the left.

The preparations for the operation being completed, the patient was made to lie on her belly, a firm cushion being placed underneath it. I made a free incision through the integument midway between the last rib and the crest of the ilium, commencing close to the spine, and terminating it in a line forwards with the anterior-superior spinous process of the ilium. I next divided the sacro-lumbalis and longissimus dorsi muscle, and part of the fibres of the quadratus lumborum. A quantity of fat and loose cellular tissue then presented, through which I carefully worked my way with the fore-finger and handle of the scalpel. This loose cellular and adipose tissue surrounds the kidney and intervenes between it and the peritoneal covering of the large intestine. By working downwards in the direction of the transverse processes of the spine, I kept clear of the peritoneum; and at a great depth in the wound I felt the right lumbar colon very tense, and offering a firm resistance to the pressure of the finger.

Before venturing to make an incision into the intestine, I was desirous of securing it by means of ligatures, and this part of the operation I found to be most difficult, in consequence of the great depth of the wound, and the want of needles with an acute angle. I however, at length succeeded in transfixing the coats of the colon with two needles armed with a double ligature, and I then made a free incision into the intestine in a vertical direction. Out rushed a quantity of flatus and liquid fæces. In a few minutes we collected two large basinfuls of the latter, mixed with a considerable quantity of scybalæ. Although the inverted peristaltic action had gone on for so many days previous to the performance of the operation, and the vomiting had continued with scarcely any intermission, the presence of castor oil (large and repeated doses of which the patient had taken), was quite evident in the discharge through the artificial opening.

The relief experienced by the patient was most decided and immediate. In the course of a quarter of an hour the tension of the abdomen had much diminished; the hiccough ceased; and after several pints of feculent matter had been evacuated, the discharge gradually abated. I then drew the intestine more forward with the ligatures, and having passed the needles deep in the lips of the external wound, I secured the opening in the colon in a manner most favourable to admit the free escape of its contents. A large poultice of linseed meal was applied to the external wound, and the patient was placed in bed, and ordered to lie on her right side. She became faint and exhausted; but after taking a little brandy and water the pulse rallied.

Tuesday, 12th. On visiting the patient I was gratified to find the progress of the case as satisfactory as possible. Since Sunday evening there has been no vomiting, hiccough, or pain in the abdomen. The discharge through the artificial anus has been most abundant, and the tension of the abdomen has nearly subsided. There is no tenderness on pressure, and the pulse, though small and feeble, beats no more than 90. An enema was administered this morning, and brought away two very small scybalæ, which were coated with a putty-like substance. The patient complains of very great soreness in the wound, the edges of which are much inflamed, and the bottom shows a disposition to slough.

Ordered good beef-tea; the poultice to be changed frequently, and a large enema to be given night and morning.

Friday, 15th. I again visited the patient. She has had no unfavourable symptom until this morning, when a return of the vomiting occurred, and there is considerable tenderness over the whole right side of the abdomen. Pulse 86, rather jerking. Tongue much furred. I ascertained that since Wednesday evening the discharge through the artificial anus has been very scanty, and not a particle of feculent matter returned with the enemas, which have been regularly administered every night and morning.

On examining the wound I found the ligature quite firm. There was a thick slough, like a piece of moistened brown paper, filling up the bottom of the wound. This I pressed on one side, and gave exit to a considerable quantity of fæces.

Ordered thirty leeches to be applied to the abdomen, and two grains

of calomel with a quarter of a grain of opium to be given every three hours.

Wednesday, 20th.—The progress of the case since last Friday has been most propitious. The tenderness of the abdomen soon subsided. The discharge through the artificial anus has been copious, but not the slightest particle of feculent matter has returned with the enemas. On examining the wound I found that the slough had separated, leaving a clear granulating surface at the sides. The ligatures were becoming loose; but as they did not appear to produce much irritation they were allowed to remain. The calomel and opium had been discontinued by the direction of Mr. Dovaston, and the only medicine taken since Monday was a small quantity of castor oil. Pulse 80. Tongue quite clean.

I did not visit Mrs. Gough again until Tuesday, 2nd November, when I found her sitting up and most grateful for her recovery. The ligatures had separated on the fifteenth day after the operation, and the whole length of the incision, excepting the part corresponding with the opening into the colon, was cicatrized. By the advice of Mr. Dovaston, the use of enemas had been persisted in night and morning; but they failed in bringing away even the smallest portion of fæces: and the patient told me she was convinced that no flatus had passed downwards since the operation had been performed. She had taken a dose of castor oil every other morning since my last visit, which produced a copious evacuation through the artificial anus.

I provided the patient with a short tube of elastic gum, which I directed her to wear in the artificial anus, and to remove whenever she feels an inclination to evacuate the bowels.

In six weeks from the day of the operation the patient walked the the distance of a mile, and declared herself better in health than for many years past.

The most remarkable part of the history of this case remains to be told. At the end of six weeks from the performance of the operation, the discharge of fæces began gradually to decrease, although the patient continued taking castor oil. She was troubled greatly with flatulence, and occasionally with sharp lancinating pains through her abdomen. At the end of seven weeks the vomiting returned, accompanied with severe colicky pains. For two days there had been scarcely any discharge through the artificial anus, and that was of a very liquid kind. The patient declared her belief that there was some obstruction at the bottom of the opening. A messenger was dispatched for Mr. Dovaston; but before his arrival at the patient's house, she had experienced a sudden and effectual relief. A hard substance had shot out from the artificial anus, which, on examination, was found to consist of five plum stones firmly agglutinated to each other. These were followed by sixteen other single plum stones, and afterwards by a very copious feculent evacuation. On the following day three more stones found an exit, accompanied with two small bones, belonging, as I should conjecture, to the pinion of a duck.

Nine months after the operation, the patient, with the exception of the local inconvenience, has no interruption to perfect health. Every

week she takes castor oil, which expels one or two plum stones. The number now collected amounts to eighty-six. She has given up the use of the enemas for some weeks, as they failed to produce any good effect; and she is confident that not even flatus has passed the rectum since the operation was performed.

The progress of the case, until within six weeks of the patient's death, presented no features of particular interest or importance. At irregular intervals, other plum-stones were discharged; and the total number collected was one hundred and sixteen.

By taking simple aperient pills, and an occasional dose of castor oil, the discharge through the artificial anus was free, and scarcely emitted any feculent odour. This circumstance went very far to reconcile the patient, and made her condition less loathsome and repugnant to feelings of female delicacy. The elastic tube had not been worn during the last year of the patient's life, the artificial anus being perfectly patent, and having no disposition to contract.

Within three months of her death, the patient was in the enjoyment of tolerable health. She could daily walk a considerable distance and attend to her usual domestic affairs. The last time I saw her in Shrewsbury was in July, 1844, when she complained of loss of appetite and general debility. She had become much thinner, suffered greatly from flatulence, and required more frequent doses of aperient medicine. I had no opportunity of visiting her until nine days before her death, when I found her in a sinking state. She had then kept her bed about a fortnight; had taken but little sustenance; had no evacuation for many days, and at first obstinately refused all medicine. She was at length prevailed upon to take a few doses of an aperient mixture, which acted freely, and the discharge through the artificial anus occurred daily up to the 14th of October, when the patient died, having lived three years from the time the operation was performed.

The body was examined on the day after death. Externally there was nothing worthy of observation but the extremely firm state of the cicatrix of the wound. The opening of the artificial anus was plugged up with feculent matter. The abdomen was slightly distended, and the whole body much emaciated.

On opening the abdominal cavity, the omentum was found remarkably thin, almost all trace of adipose substance being removed, leaving only a thin semi-transparent membrane. The cæcum and ascending colon were enormously distended.

I commenced tracing the intestinal canal from the duodenum to the cæcum, passing inch by inch through my fingers. The whole line was perfectly empty. There was no trace of disease or even adhesions until arriving at the termination of the ilium, where three membranous bands were discovered running in a lateral direction, and connecting that portion of the small intestines with the cæcum and ascending colon.

The cæcum itself and the ascending part of the arch of the colon appeared of unusual size, until it was suddenly cut short at the *transverse* part of the arch, by the intervention of the most rigid stricture I ever felt. If a piece of whip-cord had been firmly tied round this part of the intestine, the occlusion would not have been more complete than was

effected by this organic change. The whole remaining portion of the transverse arch of the colon, its descending part, and the sigmoid flexure, were collapsed, and formed a thin flaccid tube.

The absence of all traces of inflammatory action in the peritoneum was very remarkable. There was no thickening, no adhesions (with the exception of the three membranous bands alluded to), or deposition of lymph. On making an incision into the intestine, between the strictured part and the caput coli, the muscular coat presented the appearance of the columnæ carneæ of the heart, throughout the whole length of the cæcum and colon up to the stricture being very firm and fleshy. This appearance of the inner surface of the colon anterior to the stricture was like what is seen in the thickened condition of the bladder in cases of obstinate and long continued stricture of the urethra.

The stricture itself was of cartilaginous hardness, and the closing of the canal so complete that it would not admit the passage of even a bristle. The extent of the stricture was not quite a quarter of an inch, of a white, pearly appearance, perfectly smooth, and having no more apparent vascularity than a tendon.

The peritoneal lining of the abdomen was quite perfect, and I was surprised to find so little thickening in the neighbourhood of the part where the artificial anus was established. The opening forming the artificial anus was in the *posterior* part of the intestine, about an inch above the valve. The length of the opening was barely one inch. Considerable deposition of lymph was found around the posterior part of the intestine, by which it was rendered firmly adherent to the deepest part of the cicatrix of the external wound. The meso-colon or duplicature of the peritoneum covering the intestine in this situation must have been separated by the great distension of the bowel, so as to allow me to open it posteriorly, without a breach of the peritoneum itself. The other abdominal viscera were healthy. No examination of the head or chest was allowed.

I believe this operation was first performed in England according to the directions of Mons. Amussat. Mr. Teale, of Leeds, performed the second: and the late Mr. Jukes, of Birmingham, the third. The detail of Mr. Jukes's case is worthy of careful perusal; and the one which I have now related proves beyond doubt the practicability of opening the *ascending* colon, without a breach of the investing peritoneal lining of the abdomen.

M. Amussat, to whom we are indebted for the revival of this operation, discusses, in a paper read before the Royal Academy of Medicine in Paris, the anatomical relations of the lumbar regions, and their connections with the corresponding portions of the colon. Speaking of the left colon, he says—"We find, upon attentive examination, that the intestine is destitute of peritoneum, in at least its *posterior* third, being here surrounded by a cellular coating, continuous with that which lies upon the outer surface of the serous membrane. The three bands of longitudinal fibres may, in the lumbar colons, be described as anterior, internal, and external; and, by measuring the space between the two latter fasciculi, we may ascertain the dimensions of the part uncovered by peritoneum, since they point out the lines at which this membrane is reflected from the bowel upon the walls of the belly."

With regard to the right colon, M. Amussat reports that he has never yet found a lumbar meso-colon, although, when the intestine was contracted, the interval between the two folds of the peritoneum has been sometimes very small. At the same time he observes, that whilst the ascending colon acquires from this arrangement a greater degree of mobility than the descending, he has never yet found it possessed of a mesentery so perfect as to render it floative in the abdominal cavity. Admitting, therefore, that this objection may be urged against an attempt to perforate the right colon when empty, it will not necessarily constitute a sound argument against such an operation when the bowel is distended.

Although we have in many instances seen the peritoneal cavity freely laid open for the removal of large ovarian tumours with no dangerous results, I apprehend that in the performance of this operation for artificial anus it is of the greatest importance to avoid a breach of the investing serous membrane. The wound is of necessity very deep, and in a part where sloughing, to some extent, is almost sure to take place, and any infiltration of feculent fluid within the abdominal cavity would cause inflammation and fatal consequences.

In performing the operation I should always advise two ligatures to be passed through the coats of the intestine, leaving a sufficient space between them for a free vertical incision. With the two ligatures the intestine should be drawn upwards, as close as possible to the lips of the external wound, before the knife is plunged into the bowel.

[In the *Second Case*, the artificial anus was made in the descending colon. The patient was a stout and muscular man, aged 43. The symptoms were somewhat similar to those in the last case, but the constipation had not been so prolonged. Mr. Clement proceeds:]

On this day, the 5th of April, I first examined the rectum. I could detect nothing wrong within reach of the finger. I then introduced a full-sized bougie, but could not pass it beyond the distance of six inches. No doubt now existed as to the seat of obstruction; and on the following day I endeavoured to overcome it by using a variety of rectum bougies, but failed to introduce the smallest beyond six inches and a half. I then tried a full-sized elastic gum urethra bougie, and this evidently passed beyond the obstruction, for on withdrawing it a great discharge of flatus took place, followed by liquid feculent matter.

Considerable constitutional disturbance was the result of this attempt; and although the patient, by excessive straining, discharged small quantities of liquid fæces, his condition was gradually becoming more alarming.

On the 12th I again made another careful attempt with the bougie, but the pressure of its point against the obstructing part caused such acute pain, and being followed by slight hemorrhage, I desisted from further interference. In the evening the patient was seized with a severe rigor and vomiting. Great tenderness of the abdomen supervened. Blood was taken from the arm; leeches applied freely all over the belly; and calomel and opium given every three hours.

In four days the inflammatory symptoms had subsided; the tender-

ness was entirely removed, but the vomiting continued, and only one slight discharge from the bowels had taken place between the 12th and 21st of the month.

The greatest attention was paid to the diet, and the irritability of the stomach was relieved for a short time by occasional doses of prussic acid.

Between the 21st of April and the 4th of May, only three small liquid evacuations were produced, and these were attributed to the effect of repeated doses of the inspissated ox gall, suggested as a most useful remedy by my friend Mr. Heathcote, surgeon of this town. The ox gall was the only aperient taken that did not seem to increase the vomiting.

On the 12th of May, after excessive straining, the patient passed by the rectum three small fleshy substances of a placenta-like appearance, accompanied with some hemorrhage, and a little feculent matter. This was the last time any fæces passed by the rectum. I again examined the rectum with the finger, and found that I could just reach some morbid growth, which certainly was not tangible on the 5th of April.

The condition of the patient during the remaining month of May was most distressing. He was harassed with constant hiccough, vomiting, and tenesmus. At times the straining was so great that blood escaped from the anus. The abdomen gradually became more distended, but was free from tenderness. As no relief could be expected from medicine, the vomiting becoming more constant, and the tension of the abdomen daily increasing, I proposed, on the 30th of the month, as a last resource, the formation of an artificial anus. The patient firmly declined submitting to the operation, and requested to have nothing given to him but opium.

From the 1st of June to the 18th he lived entirely upon small quantities of beef-tea, brandy, and soda water, and large doses of liq. opii sedativus.

This day, the 18th, for the first time feculent matter in large quantities was vomited; and on visiting the patient in the evening he told me if the feculent vomiting continued he would submit to any operation. The 19th passed with only the ordinary kind of vomiting. The 20th brought a recurrence of the feculent vomiting to a considerable amount, and then the patient earnestly requested to have the operation performed. The rectum was again examined with the finger, and the morbid growth was found to be much lower down. It entirely filled up the hollow of the sacrum, was spongy to the touch, and on withdrawing the finger it was covered with a bloody serum, which, however, had no unpleasant odour.

On the 21st of June, at one o'clock, the operation was performed in the presence of many of my professional friends. The stercoraceous vomiting had continued all the morning. The abdomen exceeded in size any that I have ever before or since seen. This enormous distension was not surprising when it is borne in mind that not a particle of feculent matter had passed the rectum from the 12th of May up to the 21st of June, a period of more than five weeks. Pulse 120, very feeble. Countenance anxious and contracted.

The incision was made as in the former case, midway between the last rib and the crest of the ilium, but on the *left* side, commencing about an inch from the spine.

The patient, although now much reduced in flesh, had been a very powerful muscular man; and I made a much longer incision than in Mrs. Gough's case, as I knew there would be a greater depth of parts to cut through. In dividing the muscles one vessel bled rather profusely, and some time was lost in the endeavour to secure it. After the division of the muscular fibres I came down upon loose cellular and adipose tissue. Pressing this aside I forced my finger deep in the direction of the transverse processes of the spine, and then felt the lumbar colon, but not so tense and resisting as in Mrs. Gough's case.

After clearing away the adipose substance, making the surface of the intestine more exposed, I passed two needles armed with silk ligatures through its coats, drew the bowel upwards, and then made a free incision into it in a vertical direction between the two ligatures. I was disappointed when only flatus escaped freely;—no fæces passed. By drawing the intestine upwards with the two ligatures, although the wound was a very deep one, I was able to reach the opening in the gut with my fore-finger, and felt satisfied that it was sufficiently large to admit the passage of fæces. Moderate pressure was made on the abdomen in the direction of the descending colon, but only flatus escaped from the wound; and after waiting some time, the patient was placed in bed on his left side, greatly exhausted by the severity of a protracted operation.

I feared that as no fæces escaped, the disease had extended above the part of the colon opened, and that the patient would not derive even temporary relief from the operation. Yet the part of the bowel opened seemed to be free from any thickening or disease.

I visited the patient at five o'clock in the evening, and found no improvement in any of the symptoms. The vomiting and hiccough had returned. There had been no discharge of fæces through the wound, but flatus had occasionally passed.

At nine o'clock I again visited him, and was much gratified to find an unlooked for improvement. About half an hour previous to this visit, he desired to have some soda water, which he drank freely. Immediately after he felt griping pains; flatus first passed through the wound, then an immense quantity of liquid fæces. The nurse had collected nearly a gallon, and it was still pumping out freely through the artificial anus.

June 22nd, 10 o'clock, a.m.—There is a decided alteration in the expression of the patient's countenance. Since twelve o'clock last night he has only vomited twice. He has had no sleep in consequence of the constant escape of feculent matter from the wound. The abdomen is reduced in size, but is tender on pressure, particularly on the left side. Pulse 106. He has made no water since the operation. The catheter was used, and more than a pint of high-coloured urine drawn off. Ordered a grain and half of calomel and a quarter of a grain of opium every four hours. Beef-tea and soda water.

[Up to July the 8th the report is very favourable, there was a moderate daily discharge of fæces, through the wound, and there had been no return of vomiting or pain in the abdomen.]

This morning (July 8th) he was seized with acute pain in the left side of the belly, and had during the night a slight shivering fit. The enlargement in the left groin has much increased, and this morning an indurated gland in the right groin is perceptible. As the patient complained of some difficulty in emptying the bladder, the catheter was again introduced, but not more than a quarter of a pint of urine was drawn off. The application of leeches to the left side of the abdomen, and suspending the use of all stimulants, constituted the treatment adopted for three or four days. The pulse was increased in frequency. The urine very high coloured, and emitting a most offensive odour. It was now too evident that the disease was operating most unfavourably on the vital powers. The glandular affection of both groins rapidly increased; the difficulty of emptying the bladder was so great that the use of the catheter was required every night and morning. In addition to these untoward symptoms, the sloughs over the sacrum and hip gradually extended, notwithstanding all pressure was carefully removed by means of the water-bed. On this day I passed my finger again into the rectum, and found that the tumour had descended close to the sphincter, and completely filled up the canal. The pressure produced by the morbid growth accounted for the difficulty in emptying the bladder.

It was satisfactory to know that, up to the day of the patient's death, no return of vomiting occurred, and no interruption to the daily passage of fæces through the artificial anus. The enlargement in each groin rapidly increased; that of the left assumed a livid appearance, and ulceration of the surface took place three days before the patient's death. The tumour also projected through the sphincter ani, and attained the size of a small orange. In substance it was rather firmer than the placenta; it was not sensible to the touch, but bled on the slightest fingering. The wound had almost healed, excepting at the part corresponding with the opening into the colon.

Although the patient was rapidly sinking, and suffering from the painful state of the sloughing wounds, he frequently expressed his gratitude for being relieved of what he termed "that horrible throwing up of the stools."

I endeavoured to alleviate his sufferings by repeated doses of opium, and the last week of his existence was one of comparative ease. The appetite gradually diminished. The pulse became weaker and fluttering. No delirium took place, but the patient retained his consciousness to the last; and expired on the 26th of July, having lived one month and five days after the performance of the operation. No examination of the body took place.—*Med.-Chirurgical Transactions*, 1852, *p.* 209.

92.—CASE OF ARTIFICIAL ANUS, TREATED BY MECHANICAL PRESSURE WITHIN THE RECTUM.

By Dr. William Macdonald, Lecturer on the Practice of Medicine, Portland Street Medical School, Glasgow.

[Six years ago, a man consulted Dr. Macdonald concerning a wound in the right groin, an inch in length, through which the fæces passed insen-

sibly. During five subsequent years, all treatment for this distressing condition proved of no avail, and the patient was informed of the incurable nature of his complaint. Dr. Macdonald goes on to say] .

About seven months ago I accidentally met the patient in question. I enquired after his health. He replied that his existence was a burden to him, and that all the fæces was now evacuated by the artificial anus at the groin, and that nothing but a little mucus came by the natural passage. On the spur of the moment I urged that he should remain in bed for some days to come, and during that period that he should constantly employ a pretty long piece of brown soap, shaped like a large wax candle, besmeared with olive oil, and kept well up in the rectum by a compress, and that in order to provoke the descent (in part at least as formerly) of the fæces by the natural passage, I also urged that a cataplasm of beanmeal should at night be kept to the artificial anus, while during the day it was to be dusted over with finely-powdered chalk, and moreover that he should take an alterative course of tincture of gentian and tincture of iodine, say five drops of the latter to a teaspoonful of the former three times daily, followed by castor oil twice a week.

At the time that I urged the employment of the mechanical pressure within the rectum, this measure was solely recommended in order to provoke in part the descent of the fæces towards the natural aperture. But great was my surprise and great was the delight of my patient, when it was found that daily there was less fæces passed out of the artificial anus by the agency of the pressure within the rectum, and at the end of two weeks the artificial anus was completely healed by the constant pressure.

After the cure was effected, I began to ascertain the real cause of my success. It was certainly very simple, and obviously quite accidental, as far as I am concerned; and although not recommended at the time, it was employed on the basis of scientific data: yet the experience of the event is well calculated to establish the value of the discovery. Thus the constant mechanical pressure of the soap within the rectum and over the sphincter and levatores ani, caused a constant tenesmus or desire to evacuate the contents of the alimentary canal, just as is produced by volition and the reflex action of the nervous system in the abdominal region during the effort of voluntary straining at stool. Again, in the constant exercise of this tenesmus, or straining as at stool, thus produced by the constant employment of the mechanical pressure, it is obvious that a farther pressure of the parietes of the abdomen is called into constant exercise, whereby a contractile force is further applied to the three membranes of the intestinal canal—viz., the peritoneal, muscular, and villous coats, and thus by the combined contractile agency of all these various tissues was the artificial anus completely cured, solely by pressure.

The patient in question was quite well for four months, and would, as I think, have been quite rid of the unpleasant consequences of the artificial anus during the whole period of his natural life, were it not for an accidental fall into the hold of a vessel, having coals on board, about three months ago, by which fall he came in contact with an angular

piece of coal, which, unfortunately for him, struck him over the very seat of the old artificial anus, and burst the integuments, through which the fæces passed out involuntarily and as formerly. Yet the employment of the same remedies as before healed the artificial anus again, in about the same period of time as before noted, and it remained whole, for several weeks, and would have remained whole, as I think, also during the patient's natural life; but I must add, and I do so with regret, that within a few weeks my patient happened to be engaged in a tumult with some inebriated friends, and in the fray he received a kick over the artificial anus again, which lately remained reopened. The patient was then informed that whenever he gave up the vice of drinking ardent spirits to excess, and whenever he was desirous of employing the former remedies, I had not the slightest doubt but the said remedies would be crowned with success, as on the two former occasions.

I have not as yet had any experience of the effects of similar treatment, in cases of artificial anus produced by gangrene of the bowels, called by some practitioners a mortified hernia; but, reasoning from analogy, I should think so, all things being equal; at any rate the treatment would seem deserving of a trial under similar circumstances.—*Lancet, Aug.* 27, 1853, *p.* 186.

93.—ON HEMORRHOIDS.

By Dr. W. S. Oke, Senior Physician to the South Hants Infirmary.

[This kind of bleeding very frequently occurs as a sort of safety-valve in obstruction of the liver; acting immediately in relieving the portal system. In such cases it should not be interfered with, if it keeps within due limits. But in some cases these are exceeded, and great debility and general anæmic symptoms induced.]

The remedy which will be found most efficacious in restraining such hemorrhage, is the purified oil of turpentine, with the tincture of kino, as described in the following formula:—

℞. Olei terebinthinæ pur. ʒss.; tincturæ kino, syrupi zingiberis, āā ʒj.; aquæ cinnamomi, aquæ mollis, āā ʒiij.; misturæ acaciæ q. s. ad bene miscendum; fiat haustus bis terve die sumendus.

It is important that the oil should be first carefully rubbed down with the mucilage, and the other ingredients gradually added, in order that the draught may be well mixed; otherwise it may be rejected.

I will now adduce a few cases, to show the efficacy of this treatment.

Case 1. A tradesman, aged forty-five, the father of a large family, had been for a considerable time subject to daily hemorrhage from the veins of the rectum. He had lost so much blood with every stool, as to become blanched and exhausted. Several medical men had been consulted, who endeavoured to restrain the bleeding by a variety of remedies, both internal and external, but without success; and the patient had prepared himself for a fatal issue. Being requested to visit him at this time, I placed him at once under the above treatment. The effect was really marvellous. The bleeding was almost immediately controlled;

and, what greatly surprised me, the stools, which had been of an ash colour—and they are always of a light colour in these cases—assumed a healthy and well digested appearance. It is, therefore, probable that the tupentine not only acted as a styptic, but also as a deobstruent in removing, in some way or other, the hepatic obstruction. Be this as it may, the bleeding never returned; the patient gradually regained his good looks, and has for many years enjoyed excellent health.

Case 2. A lady, aged forty-seven, unmarried, of a bilious aspect, and regular in her menstruation, had been for some time disordered in the hepatic function, and subject to severe facial neuralgia. She was at the time, in the habit of losing large quantities of blood by stool. After a while, the bleeding ceased spontaneously; but her general health did not satisfactorily improve. Shortly afterwards the hemorrhage returned, and continued daily for two months; when she became so bloodless and debilitated, as to occasion great anxiety and alarm to her friends. I went to town to see her, and immediately recommended the turpentine in the above formula. In a week the bleeding was controlled, and the medicine was left off. It returned, however, as profusely as before, and the remedy was resumed three times a day for another week; after which it was again and completely successful. She has been in good health for the last two years.

Case 3. Mrs. C., aged thirty-nine, married, but without any family, came to consult me, in February, 1852, for bleeding from the hemorrhoidal vessels. She informed me that she had lost a large quantity of blood with every stool, but at no other time, for the last eight months. Her aspect was most unfavourable. She was pale as death, and was constantly drowsy. Her pulse was feeble and rapid, her tongue colourless and cold, her feet œdematous, her respiration hurried, and her strength so exhausted that she was scarcely able to walk across the room; in short, she appeared to be in a hopeless stage of anæmia.

In this case, as in the two former, the same treatment was equally successful. At her next visit, she told me that the hemorrhage had ceased on the third day after she had commenced the medicine, and reported herself much better. From this time her health steadily improved, without any return of the bleeding; and her strength was restored under the use of dilute sulphuric acid and decoction of bark, with gentle aperients.

Turpentine, in the above formula, has seldom failed in my own practice to ensure the purpose of a styptic in this kind of hemorrhage. Whether it acts as a deobstruent also in removing the obstruction of the portal capillaries, I have not sufficient evidence to decide; though, from its subtle qualities entering the vascular system so rapidly, such a result is not improbable. It certainly appeared so to act in the first case. As a styptic for internal passive hemorrhage it stands unrivalled.

The bowels are to be regulated by such aperients as will gently act upon the liver, without irritating the rectum.

℞. Pil. hydrarg., extracti jalapæ (vel extr. rhei), extracti copaibæ, sing. ℈j. Misce; divide in pilulas xij; è quibus capiat duas horâ somni pro re natâ.

Should the bleeding recur from a hemorrhagic idiosyncrasy, an injec-

tion of cold water should be employed every morning; which will not only evacuate the bowels, but give tone to the veins of the rectum.—*Association Med. Journal, Aug.* 12, 1853, *p.* 700.

94.—ON TYPHLOLITHIASIS AND TYPHLOSTENOSIS.

By Dr. Albers.

[The object of this paper is to show that these diseases—the formations of concretions *in*, and constrictions *of*, the cæcum,—however much their constitutional symptoms may differ, are nearly similar in their terminations.]

1. Of intestinal concretions, those occurring in the cæcum demand our chief attention, on account of the severe sufferings produced by them. The attending symptoms are those of an inflammatory ileus, the result is most generally fatal. As to situation, they occur either, (1) though most rarely, in the depression on the surface of the ilio-cæcal valve, looking towards the small intestine; or, (2) in the vermiform process; or, (3) on the broad surface of the cæcum, where they are generally retained by a projecting intestinal fold.

Even in the healthy state the ileo-cæcal valve is more strongly developed in its right half than in the left, and it there forms a depression similar to that of the semilunar valve of the aorta. This portion of the valve becomes still further developed in individuals who have repeatedly suffered from fæcal accumulations, or typhlitis stercoralis, and the above-mentioned depression then becomes a kind of pouch. In this lie concretions which probably have formed in the upper portions of the intestinal tube, and which, having passed down, are accidentally detained in it. Half of such a concretion which was sent to the author was as large as a walnut, and consisted of two distinct layers. The external, a light, friable, calcareous crust of some thickness; internally white, and enclosing a few portions of the rind of kernels of fruit: externally brown, and speckled here and there with white points. The nucleus was surrounded with a similar but much thinner layer, appearing like a leaf folded on itself, and gradually blending with the nucleus. Between the folds lay blackish grey-brown masses of hardened fæces. Microscopic examination disclosed in both layers a number of amorphous granules, of which the internal were more transparent than the external. In the centre of the nucleus were observed, with the aid of the microscope, the remains of a portion of cabbage-leaf, and of muscular fibre, with crystals, including some of triple phosphate. From this, and the statement obtained of the post-mortem examination, it was inferred, that a nucleus of fæcal and calcareous matter had first formed, perhaps even in the highest portion of the small intestine, and that, during the retention of this nucleus in the pouch already described, a coating, consisting almost exclusively of calcareous granules, the result of a peculiar secretion of the mucous membrane, had been deposited on it, The condition of this thick coating, which was, moreover, quite uniform, proved the long detention of the concretion in the depression alluded to; the latter

was, in this case, enlarged into the form of a sac, the mucous and muscular coats being atrophied in consequence of the pressure of the concretion, which was found immediately under the serous coat. The author illustrates this simultaneous obliteration of the intestine by the analogy of œsophageal diverticula. In addition, a congestive or inflammatory irritation appears sometimes to occur around the concretions, perhaps even causing the formation of organic blastemas, which envelop the concretions, and, where the latter are encysted, give the entire the appearance of a morbid growth. In proof of this the author quotes cases of the occurrence of such calculous formations in other parts of the intestinal tube, but especially in the colon and the small intestines.

The concretions which occur in the vermiform process are, according to the observations which have hitherto been made, incrusted foreign bodies, or calculi properly derived from the mucous membrane.

The concretions found on the broad surface which the cavity of the cæcum presents internally have likewise been, in some instances, incrustations; in others, originally developed calculi. The author in support of this, also quotes the observations of writers in reference both to man and the lower animals. These calculi have in general a roundish oval form, corresponding to the bulgings of the cæcum, and, like urinary calculi, present an uneven, mammilated surface, and frequently bear, as they do, impressions of the folds of mucous membrane. They consist of a light nucleus, on which the solid earthy layers have formed. In incrustations, too, the outer crust deposited around the foreign bodies is composed of layers, showing the interrupted manner in which the incrustation has taken place. Between these layers we find yellowish and gray deposits, as thin as paper, by means of which the several strata of deposit are, as it were, cemented together. In incrustations the nucleus is always a foreign body; in other concretions it is either a visible or invisible fæcal particle, or a pure calcareous mass. If the nucleus is soft, it may be assumed that it contains the residue of some article of food, such as crumbs of bread, or husks of oats or barley. Incrustations may contain the most dissimilar foreign substances, but a gall-stone rarely forms the nucleus. The question whether all alvine calculi are not incrustations, and chiefly such as are found around gall-stones, has been answered in the negative by the investigations and experience of the author and others, and it has been proved that concretions found in the cæcum are in general calculi purely derived from the mucous membrane, or incrustations, with commingled fæcal matter. The usual colour of these concretions in the human subject is brownish-yellow externally and in the nucleus, and white in the layers; in the horse they are ash-grey, both internally and externally; in serpents they are white; the bezoar of the mammalia is yellowish-white. Human concretions differ from those of the lower animals in the variety of their colouring, and their striking stratification. The best accounts given of the chemical nature of these formations are those by John, Davy, Thomson, and Wollaston. In no part of the intestine can the formation of concretions be regarded as the result of a purely chemical decomposition, the co-operation of a vital action is always requisite; a morbid secreting process, by which either the chemical elements are placed in a position,

and receive a tendency, to combine, or an adhesive matter capable of uniting them, is prepared. This view is supported by the laminated constitution of the calculi and the simultaneous existence of several concretions. Most of them receive their foundation from the ingesta, and their further development is due to the aggregation of ingredients formed by abnormal secretion. The circumstances which determine these serial formations exhibit nothing essentially characteristic or different from those which attend other affections of the cæcum. Besides, most of what the author says on the subject, and on the treatment, is borrowed from others. A case observed by him, in which the calculus was expelled by suppuration through a vicarious anus, gives, with Monro's corroborative experience, a hint to surgery.

2. *Calcareous deposits and formation of bone on the cæcum and in the surrounding parts.*—The former take place principally in the areolar tissue which attaches the cæcum and ileum to the abdominal parietes, close to the edge of the intestine, in the depression which the bowel forms posteriorly where it lies on the abdominal wall. They form concretions from the size of a pea to that of a hazel-nut, which lie along the intestine in a series extending from an inch to an inch and a half in length. In the fresh state they are white, soft, and mortar-like; when dry, they are hard, as friable as chalk, or somewhat firmer; in the folds of the opening of the ileum into the cæcum round the junction of the latter with the colon, they penetrate from the sub-peritoneal areolar tissue into the wall of the intestine, injuring both its muscular coat and the intestinal canal. If they attain a more considerable size, they not only give rise to atrophy of the wall, but impede the peristaltic motion of the intestine. The fæces lie here, instead of being passed onwards, particularly when the earthy deposit, by its projection, diminishes the calibre of the canal, at the same time that by its size it interferes with the intestinal movements. Obstruction of the canal, impaction of the fæces and of the ileum, are the results. But a very calcereous mortary deposit seldom occurs in the cæcum without a similar deposit being at the same time found in the mesentery and in the lymphatic glands. Since the latter exhibit, in the chalky masses deposited in their interior, only the cicatrices of cured scrofulous affections, it is probable that the deposits around the cæcum owe their origin to the same disease, and that they are the remains of scrofulous formations which have previously taken place in the neighbourhood of this portion of the intestinal tract. The author, having attempted more fully to prove this position, proceeds to mention cases of illness caused by these chalky deposits. Since scrofula most generally leaves behind it only small morbid productions, from the size of a pin's head to that of a pea, which are subsequently found in the long fibrous areolar tissue surrounding the cæcum, and therefore appear in cicatrizing to have removed further from the intestine and to have withdrawn into the areolar tissue; and as they are even found in adults without having been attended with illness, they, as the remains of a disease which had existed, point to an interesting process of cure. On the contrary, those deposits which by their size prove injurious to the intestine, are so much more important for the physician, as they may even be the cause of death. A pain in the right iliac re-

gion, which is observed from time in scrofulous patients, is increased on pressure and thus exhibits its inflammatory nature; tension of the part usually occupied by concretions, and of the entire swollen abdomen; attacks of diarrhœa with very mucous stools; nightly prespirations; paleness; fretfulness and variable appetite, lead to the suspicion of scrofulous depositions taking place in the neighbourhood of the cæcum. The occasional inflammatory irritation (pain) indicates what is going on in the cavity of the cæcum; when the inflammation extends to the mesentery, the seat of pain also becomes more extensive. If these symptoms, as they usually do, pass over disregarded, more considerable deposits of calcareous matter sometimes suddenly induce the most violent attacks of an inflammatory ileus. But even the less considerable depositions, which are not commonly brought under the notice of the physician, may excite an inflammation of the areolar tissue, a spurious peritonitis, which then in its turn may cause a perforation of the cæcum, as is observed in perityphlitis (rheumatica). Besides this deposition and calcification of the scrofulous matter in the areolor tissue, a calcification occurs in the glands which sometimes lie immediately on and about the cæcum. The intumescence of the mesenteric glands does not, generally speaking, always occur in the several cases of scrofulous disease in the same part of the mesentery. Their accumulation around the cæcum is rare, and then it is often found that they contain within them mortar-like, chalky masses, one of which forms the centre point of each independent gland. Convolutions of glands, as large as hens' eggs, often occur on the edge of the cæcum inclining to the great mesentery, while some of smaller size are found in the little mesentery of the vermiform process. The effects of such glandular masses, whether they contain calcareous deposits or not, on the portion of the intestine they adjoin, are the same as those of the above described deposits. They paralyse the intestine by their pressure, and cause torpor of the bowels and obstinate constipation. These glandular formations explain many of the symptoms which attend scrofula, and especially the constipation so frequent in combination with pain in the ilio-cæcal region. The cæcum being compressed and paralysed by the enlarged mesenteric glands, is in such cases the proximate cause of the constipation. Ossification of the size of a pea, of a grape-stone, or of the shape of a little flat disk, occurs on the cæcum, especially on the arch of its free extremity. These are situated in the wall of the intestine, in the areolar tissue, or the muscular coat, and are consequently covered externally by its serous, and internally by its mucous, membrane. Dr. Albers' view is, that the subserous areolar tissue is the exclusive seat of such ossifications. Such superficial formations of bone appear to resemble those which occur in the form of flat disks under the pleura, on the arachnoid membrane of the brain, and on the peritoneum, and to be the result of a previous inflammation. The more frequent occurrence of such ossification on the cæcum than in the rest of the intestinal tract has been supposed to be owing to its situation being more favourable to such formation. This portion of the intestine is more liable than the rest to insidious inflammatory attacks; an inflammation of the cæcum may generally (?) be suspected whenever the right iliac region is the seat of pain increased by pressure, and the other

symptoms of the case indicate an affection of the digestive organs. If the inflammation run tolerably high, there will surely be a deposit of blastema in the intestinal walls, laying the foundation of osseous formation. In addition, it must be borne in mind, that scrofulous inflammations have their seat in this portion of the intestine, and in healing leave behind them chalky masses. Ossification of the appendix vermiformis, as well as the formation of chalky deposits on this part, is rare, although the deposition of scrofulous and tuberculous blastemas is frequent, particularly at its blind extremity under the peritoneum. Inflammation of the verniform process seldom terminates in the manner above described, because the products of inflammation are almost entirely absorbed on the setting in of the convalescence. It is supposed that this process possesses such a discutient power, in common with other canals invested with mucous membrane, in virtue of the abundant secretion of the latter being a means of relieving the disease and removing the morbid products; and the mucous (and fæcal) masses found in the appendix, show that its mucous membrane is capable of producing an abundant secretion. Dr. Albers, in conclusion, narrates two cases in which chalky deposits were found in the vermiform process. — *Dublin Quarterly Journal of Medical Science, August* 1853, *p.* 248.

ORGANS OF URINE AND GENERATION.

95.—CASES OF LITHOTOMY IN WHICH THE OPERATION WAS PERFORMED BY A NEW METHOD, (RECTO-URETHRAL.)

Under the care of Mr. Lloyd.

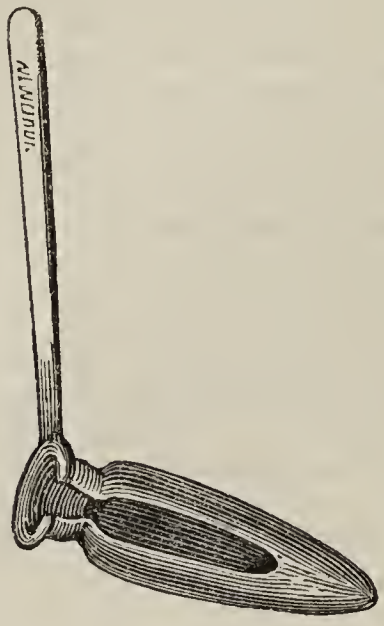
[For several important reasons, Mr. Lloyd was led to believe that a modification of the method of operating known as lithectasy, and the recto-vesical operation, might obviate many of the risks involved in either separately.]

The modification which he proposed was, to perform the first half of the operation as if for recto-vesical lithotomy, and the second after the manner done in lithectasy, or that by dilatation of the urethra. He determined to make an incision from the median line of the perineum into the rectum, dividing the posterior three-fourths of an inch of the former structure, and about the same length of the lowest part of the front wall of the rectum, thus including the anterior commissure of the sphincter ani and the fascia and cellular tissue contained in the recto-perineal angle. The next step was to consist in dissecting upwards from the wound just made, still keeping in the median line, to the membranous urethra; and having entered the groove in the staff, and slit up the whole length of that part of the canal, the prostatic portion was to be dilated sufficiently to permit of the extraction of the stone, *without any incision into either prostate or bladder.* By keeping strictly to the median line, there could be no risk of wounding any important artery of

either natural or irregular distribution, since none but the inosculating capillaries and small twigs from the opposite halves of the body are there found. Should any of the hemorrhoidal branches, which perhaps form an exception to this remark, be wounded, their ligature, in an open and comparatively superficial wound, like the one described, would be a matter of perfect ease. If an objection were made, that there was risk of wounding the bulb, the remark might be repeated by way of answer, since it has been proved, that it is not from injury to the bulb itself, but to the artery of the bulb, that dangerous bleeding is to be apprehended. Respecting inflammation of the cellular tissue between the bladder and rectum, Mr. Lloyd believed, that by making a directly depending wound, freely dividing the sphincter ani, and the angle formed by the rectum and perineum, the possibility of the occurrence of its cause, viz., infiltration of urine, would be almost entirely removed; in fact, as a preventive measure, the exact proceeding would have been adopted which Sir Benjamin Brodie has recommended with some confidence, and practised with success, for the relief of this condition after its occurrence. That the new operation would be attended with but little risk of exciting peritonitis, Mr. Lloyd thought was evident from the consideration of the circumstances. that urinary infiltration would be prevented, that the wound would be made entirely from below, and at a considerable distance from the vesical layers of that membrane, ahd that neither the bladder nor the prostate would be injured. Having thus satisfied himself of the theoretic advantages which would attend his plan, Mr. Lloyd next proceeded by experiments on the dead subject to demonstrate its practicability. In one case in which it was tried (an adult), the necessary incisions having been made, the prostatic urethra was found to dilate so readily, that it was remarked, that a turkey's egg might have been extracted, yet, on dissection, afterwards, it was proved, that the gland had not been cut. By this result the most apparent objection to the plan, namely, that the structure of the prostate was of too unyielding a nature to permit of the extraction of a stone, was got rid of, at least as far as calculi of ordinary size are concerned. To the suggestion that wounds connecting the bladder and rectum were not prone to heal, but often left fistulæ, Mr. Lloyd replied, that in the proposed operation there would be only a connexion between the membranous urethra and the rectum; that it was notorious, that wounds of the rectum, attended even with complete division of its sphincter, usually closed favourably, as also openings from the perineum to the membranous urethra (as in the perineal section of strictures), and stated that he could see no reason why a combination of these two conditions should not heal just as well as either of them singly. In addition, also, to the preceding advantages, it was thought, that the bladder would be much more easily reached in the median line, and the stone extracted with greater facility through a direct than a lateral incision.

[In the case first mentioned, the patient was a boy, aged six years. The urine was ammoniacal and contained pus, and in sounding, Mr. Lloyd detected the presence of stone. It was decided upon to remove it, and on May 31st the operation was performed.]

Operation, May 31. Chloroform having been administered, the boy was tied in the ordinary lithotomy position, a curved staff, with a rather deeper and wider groove than usual, was introduced into the bladder, and the stone was again distinctly felt. The staff being taken charge of by Mr. Paget, and held in the usual position, Mr. Lloyd next introduced into the rectum a metallic *speculum ani*, which, as it differed somewhat from those in general use, we here figure. Its peculiarity consists in its having a constricted neck, by which its retention within the contracted sphincter is rendered easy. This instrument having been introduced with its aperture turned upwards to the front commissure of the gut, its handle was given in charge to an assistant, and Mr. Lloyd next proceeded to the incisions. The angle formed by the junction of the perineum and rectum was transfixed and divided with a narrow-bladed scalpel, the knife being pushed with its edge directed downwards into the median line of the perineum, about half-an-inch from the verge of the anus, allowed to enter the front wall of the rectum, at about three-quarters of an inch up the gut, and then, by a single sweep, made to cut its way out downwards into the cavity of the speculum. The next step consisted in dissecting upwards and inwards to the membranous urethra, the operator keeping his left fore-finger in the wound, and feeling for the staff. Having found the groove in the latter, the finger was placed, in order to serve as a guide to the knife, on the anterior border of the prostate, at which point the knife was made to enter the groove, and by cutting *forwards*, division of the whole length of the membranous urethra was accomplished. A pair of small straight polypus forceps were next passed along the groove in the staff, into the neck of the bladder, and the dilatation of the prostatic urethra was accomplished by gently opening their blades, and then closing and re-opening them several times. During this process, which occupied nearly a minute, several gushes of urine escaped. The dilatation having been effected to such an extent that the fore-finger could be very readily passed, Mr. Lloyd withdrew the staff, leaving his finger as a guide, on which a pair of slightly-curved extracting forceps were immediately introduced. The stone was at once found, but, apparently, from its occupying the upper and front part of the bladder, it several times eluded the grasp of the forceps, but when once firmly seized, it was extricated with great ease. In order to prevent the roughness of the stone from injuring the important structures in the floor of the prostatic urethra, Mr. Lloyd endeavoured, as much as possible, to hold the blades of the forceps with their convexities directed upwards and downwards, while passing through that part. The calculus proved to be about the size of a small damson plum, being quite smooth on one



side, in which its nucleus, probably lithates, was displayed, but very rough on the other, from irregular phosphatic incrustations. Having examined the bladder with his finger, and ascertained that no other concretions were present, Mr. Lloyd introduced through the wound, into the bladder, a short gum elastic canula, and attached by means of a suture to one edge of the incision. The quantity of blood lost had been unusually small, and the operation had occupied but a short space of time.

[On June 1st the symptoms were very favourable, and the urine passed freely through the canula. On the next day the canula was removed, and from this date the recovery was uninterrupted. The next case, was a boy aged 12: six weeks previous to admission he had received an injury in getting over some palings, which terminated in perineal fistula. During the treatment of the fistula a stone was discovered in the bladder. As soon as the boy's health was somewhat restored the operation was commenced.]

In its first steps, the operation, in this case, so precisely resembled that of the one just described, that we need not again detail them. No difficulty was found whatever in entering the bladder and dilating the prostatic urethra to the requsite extent. On introducing the forceps, the stone was at once seized, but, being friable, broke down into several portions, and was removed piecemeal, partly by the forceps, and in part by means of the scoop. The bladder being afterwards well syringed with warm water, to remove the detritus, a short canula was introduced, and retained by a suture. The quantity of blood lost had been rather more than in the preceding case, but much less than in the average of lithotomy operations. As far as could be ascertained by fitting its fragments together, the stone appeared to have had originally a size about equal to a bantam's egg.

[Little need be said more concerning this case, as, like the last, the recovery was in every way favourable. In the next case the patient was 33 years old, but the operation was commenced and continued on the same plan. The stone was of large size, and removed with facility. It weighed nearly an ounce and a quarter. The recovery in this case was also exceedingly cheering. In all these cases the operation was performed with facility. A small quantity of blood was lost, and there was little constitutional disturbance subsequently. In the last case, it may be observed that the patient acquired voluntary power over the expulsion and retention of the fæces and urine on the seventh day, and on the ninth, the urine ceased to flow through the wound at all.] *Medical Times and Gazette, Aug.* 6, 1853, *p.* 138.

96.—*On Litholiby.*—Dr. Denamiel has read before the Academie des Sciences of Paris a memoir upon "Litholiby;" by which term he designates an operation consisting in the crushing of the stone, as it lies in the trigon vesicæ, behind the prostate, between an instrument introduced by the urethra into the bladder, and the fore and middle fingers

of the left hand, introduced per anum. He affirms that some calculi are so friable as to break under the least pressure; that the trigon vesicæ, where free calculi generally lie, is accessible to the finger introduced into the rectum; and that a sound passed into the bladder may serve as the *point d'appui*. He also states that the action of alkaline fluids upon the mucus, which forms the common cement of the elements of calculi, leads to the disintegration of the mass, whatever may be the chemical composition of the layers which compose it.

The distance from the integument to the neck of the bladder is commonly $2\frac{1}{4}$ inches; it varies between 1 inch and 4 inches. The prostate gland and the trigon vesicæ are separated from the rectum by only a very thin layer of areolar tissue, in which fat is never deposited; consequently, any hard body may be easily felt and compressed.

The patient, having the bladder moderately distended, is put into the horizontal position, upon a properly constructed bed; the thighs separated and raised; and feet resting upon chairs. The left fore and middle fingers of the operator are then introduced into the rectum, and the stone is felt. A curved sound, grooved upon its convexity, as far as its vesical extremity, that it may the more readily hold the stone, is next passed into the bladder. Then pressure is made, until the calculus gives way. In many cases, a very slight amount will suffice. Should any difficulty arise, the pressure may be directed alternately towards the right or the left, that every part of the surface of the stone may be acted upon. In cases where the calculi are hard, several sittings are required, and the use of alkaline fluids becomes needed, to favour their disintegration. A quantity of warm water should be injected into the bladder after each operation, that the smaller fragments may be immediately washed away.—*Med. Times and Gazette, Aug.* 20, 1853, *p.* 198.

97.—IRRITABILITY OF THE BLADDER TREATED BY NITRATE OF SILVER INJECTIONS.

By William Reeves, Esq., Carlisle.

[Mr. Reeves remarks, that he believes he first got the idea of thus treating this disease from a French author. The action of nitrate of silver he considers to be that of a tonic to the mucous surface. He remarks upon the great benefit he has found from it in the treatment of varicose veins.]

Case 1.—M. M., aged fifty-six, of a fair complexion, and nervous temperament, called upon me early in the year 1850. Said he had been troubled with great irritability of the bladder for upwards of twenty years; had consulted many practitioners, and taken a numerous list of prescribed remedies without benefit. Cannot go to church for the frequent calls to void urine. Is not able to rest at night; two or three tablespoonfuls of urine in the bladder causes him the most intense pain, so severe, that he is obliged to bend himself almost double till it is voided; and, latterly, the pain continues even after the bladder is emptied. His sufferings are so great, that life is a burden to him, and

he is willing to submit to any treatment in hopes of relief. Tongue pale and flabby; lips and face pale; urine pale. Ordered a mineral tonic, and the bladder to be injected with a solution of nitrate of silver, of the strength of twenty grains to the ounce. After the injection he walked home, a mile or more, in great pain, and went to bed, and drank barley-water. The pain from the injection was more of a soreness than acute pain, and lasted a few hours. He then got relief, and was free from all symptoms for about six months. He then had a slight relapse; the nitrate of silver injection was repeated. He wished for it, and did not suffer much from it, and remained well for a few months afterwards. Some symptoms then making their appearance, by his own desire the nitrate of silver injection was used again, and he suffered a few hours as before, but since this period he has been well. It is upwards of three years since the last injection, and he now says—"I was never better in my life."

Case 2.—W. W., aged twenty, the son of delicate parents, and himself of a spare habit and nervous temperament, first came to me March 22nd, 1852; had been off health for more than a month. Prior to this, he says, he enjoyed good health, though three years ago he contracted gonorrhœa, which was cured after six months' treatment; never felt much inconvenience from this complaint. Now complains of frequent and painful calls to void urine, every two hours or oftener, and after having emptied the bladder a most excruciating pain extends from the prostate to the glans penis, and persists for ten minutes or more after each evacuation. This was not so much the case at first, (a month ago), for he was relieved then after each evacuation. During the ten minutes of excruciating pain he feels as if there was more urine to void, which causes a great deal of straining, and the expulsion of blood and ropy mucus. Has been under treatment, and has been sounded for stone, which latter manipulation I subjected him to again without detecting any foreign body. A spasmodic stricture resisted the introduction of the sound; but being overcome, the process was easily accomplished, though not without great pain from the tenderness along the urethra and the bladder.

From all the circumstances of this case, I concluded it to be an aggravated form of irritable bladder, accompanied by chronic inflammation of the lining membrane, and at once injected the organ with a strong solution of nitrate of silver, and ordered him a mineral tonic, and a morphia draught. He walked home after the injection, a distance of two or three hundred yards, and went to bed.

March 23rd. He suffered uneasiness after the injection for a few hours, but nothing compared to the straining from the disease. The first time he voided urine after the injection, the pain was considerable, and he had to get out of bed five times within five hours after the operation; then the pain lessened, and he slept for seven hours, and afterwards voided urine in good quantity, and clear, and in a full stream, with some little smarting, but no straining followed, and no ropy mucus or blood.

24th. Feels considerably improved; there is little or no pain or uneasiness, and the calls to void urine are at pretty long intervals.

30th. Is altogether improved, and able to go about much as usual, as far as the bladder is concerned.

May, 1853. He has not again been troubled with the irritability of the bladder up to the present date.

Case 3.—July 12th, 1852: G. M., aged thirty-five years, the mother of seven children; all her labours had been easy; has now suffered from ill health for two years. Her first indisposition began with pain in voiding urine, with frequent calls, and very little passed at each time. Night and day she was thus distressed; dare not leave home, the calls to void urine and the pain are so urgent; has daily been getting worse, and now, from the straining, blood and ropy mucus accompany each discharge of water. At first she got relief after emptying the bladder; now her pain is before and after the evacuation. After sounding, without any detection of a foreign body, the bladder was injected with a strong solution of nitrate of silver. She suffered considerably for a time after the operation, and then her symptoms lessened. At the present date, May, 1853, she is free from all irritability of the bladder.—*Lancet, June* 11, 1853, *p.* 536.

98.—REMARKS ON THE SURGICAL OPERATIONS USUALLY ADOPTED FOR RETENTION OF URINE.

By Edward Cock, Esq., Surgeon to Guy's Hospital.

[When all palliative measures have failed to relieve retention of urine, and the consequences are threatening the life of the patient, the surgeon has at his command three modes of treatment for the removal of the danger,]

He may take a small but strong catheter, one that will not easily bend, and, firm of purpose, with unflinching hand, and fearless—I had almost said remorseless—heart, he may carry it through all intervening structures and obstacles into the bladder. Again, he may take a knife and cut into the perineum, and endeavour to find and open the urethra behind the stricture and just anterior to the prostate, thus arriving at the bladder by a somewhat more surgical and scientific process than by the first method. Lastly, he may take a trocar and canula and puncture the bladder through the rectum or above the pubes, leaving the urethra and stricture inviolate and untouched.

There is nothing new in either of these measures for relieving retention. I have seen them practised, and have had recourse to all of them myself very many times. They may each possess certain advantages, and the circumstances of the case and the condition in which we may be placed, may incline us to the adoption of either the one or the other. They all have their drawbacks; but, on the whole, I am disposed to believe that the bladder may be reached with the smallest amount of pain, with the least risk of present or future danger, and with the greatest prospect of ulterior good, by puncture through the rectum.

The first of the three operations I have enumerated is, it must be confessed, somewhat Alexandrine in its character. It may be denom-

inated "forcible catheterism." It is, as it were, puncturing the bladder with a blunt instrument—*tunnelling* through the perineum, under cover of the urethra. It is neither scientific in its conception, surgical in its performance, nor anatomical in its details. It can only be countenanced and justified on the principle, that the end sanctifies the means. Attempts have been made to modify and soften down its essential roughness by denominating it the operation of forcible dilatation or breaking down of a stricture, and the surgeon, perhaps, tries to delude himself into the idea that his instrument either enters the stricture and forcibly expands it, or else that it breaks it down and destroys it.

To the best of my belief neither of these desirable events ever occurs. The catheter neither expands nor crushes the stricture, but it altogether eludes it, passing outside the obstacle, and then either re-enters the urethra below, or else continues its course through the prostate into the bladder. I have, at different times, had the opportunity of examining (*post-mortem*) the urethras of many persons who had evidently undergone this species of catheterism, and I have never failed to discover the loop, or, in railway parlance, the line of road, where the instrument had left the canal to re-enter it at some point below the stricture.

Nevertheless, the operation of forcible catheterism is one which we are not unfrequently obliged to have recourse to as the only means available to relieve our patient; and when performed resolutely and firmly, with a small strong instrument adapted for the purpose, it is not necessarily, or indeed usually, followed by the evil consequences which it might be supposed to entail on the sufferer. The great object in view, the evacuation of the bladder, is accomplished, and time is afforded for the employment of means to prevent the recurrence of retention. Still the evil day is merely delayed, as the stricture, the cause of mischief, remains in its original state; and a false passage has been added thereto, presenting a new obstacle to legitimate catheterism. We leave the urethra worse than we found it; the threatened disaster is staved off, but not annihilated.

The second method for relieving retention and establishing a ready outlet to the contents of the bladder, is one, I believe of long standing and well known to all surgeons. This method consists in opening the urethra between the stricture and the prostate gland. A knife is carried through the perineum in the direction of the membranous portion of the urethra, and, guided by the finger in the rectum, the canal may be reached and opened a little anterior to the prostate. The urine may then be allowed to flow through the artificial passage, or, what is still better, a female catheter may be passed and retained in the bladder. This operation, when performed with dexterity and success, has a great advantage over that of forcible catheterism. The opening thus established may be rendered available for the evacuation of the urine during any length of period that may be necessary; whilst the diseased urethra, relieved from its function as a urinary organ, is no longer irritated by the constant pressure of the contents of the bladder from the one side or the repeated fruitless attempts to introduce instruments from the other. It may be allowed to repose and recover from the injuries it has sustained. Indeed, were this operation as easy to perform as to describe, it would, probably, long ago have become one of constant occurrence.

Every practical surgeon, however, is fully aware that to open the membranous portion of the urethra, even when the surrounding structures are normal and unaltered by disease, is by no means an easy undertaking; and that the difficulties may be so far increased by long standing disease of the perineum, by induration, fistulæ, abscesses, and partial extravasations, as to become insurmountable. Under such circumstances, I have seen incalculable mischief, and not unfrequently a fatal result, produced by the long-continued yet unavailing attempts of the surgeon to discover the urethra, and accomplish the object for which the operation was undertaken.

A modification, or rather an amplification, of this operation is sometimes practised, or rather attempted to be put into execution. It is called the "cure of stricture by division."

The principle consists in uniting the upper and lower permeable portions of the urethra by the division of the intermediate impermeable portion, and thus restoring the integrity of the canal. The operation is hardly adapted to cases of urgent retention, but has frequently been had recourse to in old chronic strictures accompanied by urinary fistulæ and sinuses, where induration of the perineum and an altered condition of the urethra and its surrounding structures has rendered impracticable the passage of any instrument. The theory upon which this operation is founded I have seldom seen carried out in its execution. The surgeon seldom succeeds in uniting the two pervious portions of the urethra by a clean, fair, and perfect division of the intervening strictured isthmus. In some few instances I have succeeded in carrying out my original intentions; but I look upon these rather as fortunate accidents under favorable circumstances, than as the legitimate results of well-ordered surgery. In several instances I have seen the operation abandoned after much mischief and disorganisation had been inflicted. In others, the surgeon has succeeded, after much time and difficulty, in carrying a catheter into the bladder; but a large majority of the patients so treated have died within the week, unmistakeably from the injuries sustained during the operation. The *post-mortems*, while they revealed false passages, lacerations, and irregular sections in abundance, showed clearly how futile had been the attempt to divide the stricture, or to discover and lay open the patent portion of the urethra behind it.

So convinced am I, by experience and observation, of the difficulty which frequently attends the operation of opening the urethra behind the stricture where the land-marks which should guide us have been obliterated; so impressed am I with the danger and fatality which is likely to result from fruitless and protracted efforts to introduce a catheter into the bladder through the perineum, that of late years I have abandoned the practice of incising the perineum with a fixed determination to reach the bladder. I consider it more expedient to be contented with a minor triumph: and in those cases where retention and extravasation render it necessary, that an outlet should be afforded to the contents of the bladder through the perineum, I limit myself to making a free incision down to the region where the urethra may be supposed to be situated; and thus, after having, to the best of my judgment, laid bare the site of the canal, and attempted, by gentle means, to introduce a

catheter through the wound into the bladder, I prefer, if this cannot easily be accomplished, to release the patient from any farther cutting, searching, or manipulation. I have almost invariably found that the urine has readily and speedily found its way through the incision, and that thus the chief object in performing the operation has been realised. At a subsequent period, when the swelling has subsided and the parts have become quiet, an instrument may generally be passed, if it be found necessary, through the wound into the bladder.

I have glanced over these two operations for relieving retention of urine, viz., forcible catheterism and incision through the perineum, for the purpose of showing the unsatisfactory nature of the first, and the difficulty and danger which often attend the latter; difficulty and danger which, although perhaps not acknowledged, are so far felt, as frequently to restrain surgeons from incurring the risk and responsibility of putting it into practice; thus inducing a fatal delay by which many lives are sacrificed.

I am anxious to explain the motives which have induced me of late years to adopt puncture of the bladder through the rectum as a means for relieving retention, although it is an operation which at no time appears to have found much favour, which latterly has nearly fallen into disuse, and is almost universally condemned, in works on surgery, as a desperate remedy, only to be used in desperate cases, dangerous in its execution, and liable to be followed by mischief and misery to the patient.

It is somewhat singular that not one of the disastrous consequences which have been described, has been realised in the considerable number of instances in which I have performed the operation. I will, however, leave the cases to tell their own story, as my only object is to show how much the operation is worth in surgery, and how far it is legitimately available to relieve a condition which of all others calls for prompt and efficient treatment.

Case 1.—George E., age unknown; admitted into Guy's Hospital, February, 1846. He appeared to be in the last stage of renal disease evidently under the influence of poison from urea, and could give no account of himself, except that he had passed no water for two days.

On examining his organs, the penis was found much mutilated by old disease, which had completely destroyed the glans and obliterated the urethra. An obscure fistulous opening existed in the perineum, through which he had probably passed his water; but this had now ceased to afford an outlet, and the perineum itself indicated incipient extravasation or an abscess. His belly was tumid, and the bowels apparently loaded. The bladder could be felt distinctly prominent above the pubes. When I saw him the usual means had already been adopted, but without relief either to his bladder or his bowels. The distension was increasing, and I punctured the bladder, through the rectum, and drew off a large quantity of water. It was remarked that when his bladder had been apparently emptied, a certain prominence would still be felt above the pubes; and this remained unaltered until he died, although the urine continued to be freely evacuated through the canula. The operation afforded him immediate relief, and during the short remainder of his

life, he suffered no more from retention. His bowels were with great difficulty opened by repeated purgatives and injections. He gradually sank into a comatose state, and died on the night of February 24, six days after his admission.

Examination.—The kidneys extensively diseased. The urethra obliterated throughout nearly the whole of its course. A supplementary bladder was found situated somewhat behind and to the left side of the true bladder, with which it communicated by an opening of considerable size. It seemed principally formed of mucous membrane protruded between the muscular vesical fibres, and was in fact an enormously dilated sacculus. The true bladder was empty, but the false one was full of urine, and constituted the permanent prominence just alluded to. It had pushed the real bladder over towards the right side, so that the trocar had entered the cavity of the latter just anterior and to the left of the opening of the left ureter. Not the slightest trace of mischief or indication of infiltration could be observed around the wound made by the trocar.

Case 2.—Thos. P., aged 43; admitted into Guy's Hospital, April 28, 1847. Dissolute and intemperate. Had suffered eighteen years from stricture, which had resisted all attempts at catheterism. Had several times been in hospitals and elsewhere, but no instrument had ever been passed into his bladder. A few weeks previously had been under my care for a few days. Had passed no water whatever for twelve hours: great agony and distress. Perineum full and tender. Being acquainted with the previous condition of this man, and knowing the inutility of delay or palliative means, I at once punctured his bladder, and evacuated between two and three pints of dark and offensive urine. I subsequently opened an abscess in the perineum.

April 25. I withdrew the silver canula and substituted an elastic tube, through which he continued to pass his water until May 3, when I found but little difficulty in introducing a small elastic catheter through the urethra into his bladder. The canula was then withdrawn from the rectum. There was no further difficulty in the ordinary treatment of this case; and when he left the hospital, five weeks after his admission, he could make water in a full free stream, and was relieved from all his former symptoms. No urine escaped through the puncture after the removal of the canula.

He died of renal disease in May, 1851. On inspection, a faint cicatrix on the mucous surfaces of the bladder and rectum indicated the site of puncture.

Case 3.—J. R., aged 22; admitted into Guy's Hospital, April 28, 1847. Dissolute and intemperate. Has had symptoms of stricture five years, following clap, with occasional attacks of retention requiring the catheter. On his admission he was passing his water with extreme difficulty and distress, and his canal had been much disorganised by previous attempts to pass an instrument. All the usual methods, employed during four days, failed in giving him relief; and on May 2, he having passed no water whatever for twenty-four hours, I punctured the bladder. Three days afterwards an elastic tube was substituted for the silver canula.

May 11. An abscess was opened in the perineum.

May 14. The tube was removed, as it had become obstructed, and the water now flowed through the natural passage. He continued to pass *a portion* of his water for some days through the recto-vesical opening, and left the hospital perfectly well May 19, three weeks after his admission.

Case 4.—J. P., aged 35; admitted into Guy's Hospital, May 21, 1847. A policeman. Between three or four years ago he sustained much injury from a forcible separation of his thighs, and ever since has suffered from gradually increasing symptoms of stricture. Two years ago had temporary retention; and for several months has passed his water by drops, with great difficulty and straining. On his admission was suffering intensely from distended bladder, and the fruitless efforts which had been made to introduce an instrument. After much trouble, a small catheter was passed into the bladder and retained until the next day.

May 24. Total retention, with great distension and distress. The urethra was too much disorganised by previous manipulation to allow of any further attempts at catheterism, and I therefore punctured his bladder. He retained the canula until May 30, when I was enabled to pass a small elastic catheter through the urethra.

June 13. The urethra readily admits a moderate sized catheter, but the bladder has in great measure lost its contractile power, from habitual over-distension. To remedy this his water was drawn off daily. In a few days his bladder regained its tone, and he left the hospital, perfectly well, June 18. I saw him about a year afterwards, and learnt that he had continued free from all symptoms.

Case 5.—J. H. aged 39; admitted into Guy's Hospital, June 25, 1847. Had suffered from stricture many years. Had retention ten years ago, and was probably much injured by unsuccessful attempts to pass an instrument. On his admission his bladder was by no means distended, but the intolerance was extreme, and he passed his water in drops with great difficulty.

The usual palliative treatment, combined with instrumental means, was adopted and continued for a fortnight, at which period (July 8) he first came under my observation. He was then enduring great agony; and although there was neither distension of the bladder nor actual retention, I judged it advisable to give him relief and supersede any further attempts on his urethra by puncturing through the rectum. The bladder only contained about eight ounces of urine; and although the operation at once relieved the intolerance and distress, he continued to suffer from dull, heavy, severe pain about the perineum and rectum. This, however, in a few days became relieved after a free evacuation of the bowels, and at the same time the expulsion of a quantity of grumous coagulated blood from the urethra, no doubt the product of previous violence.

July 14. The canula, which had become coated with calculous matter, and was producing great irritation, was now removed. During the next two weeks, he passed his water principally through the rectum, but also in an improving stream through the urethra; the recto-vesical

puncture acting as a safety valve, through which the urine gushed out whenever there was any urethral obstruction, or when he strained forcibly to micturate. I now introduced a small bougie into the bladder, and the case readily yielded to ordinary gentle treatment, until he left the hospital quite well, August 17.

[Mr. Cock now relates 38 cases in which perfect success followed the operation of relieving the bladder by puncturing it through the rectum, and which also he believes in many cases to have materially tended to the restoration of the patient, by the less degree of suffering induced, and by the more speedy and effectual relief it afforded. To this paper, in August 1852, he adds the following postscript.]

The trocar and canula which I am in the habit of using for puncturing the bladder, are essentially similar to those which have been hitherto employed for that purpose; but I have found it advisable to increase their dimensions in length and thickness. I have also added a blunt-pointed or pilot trocar, which very much facilitates the introduction of

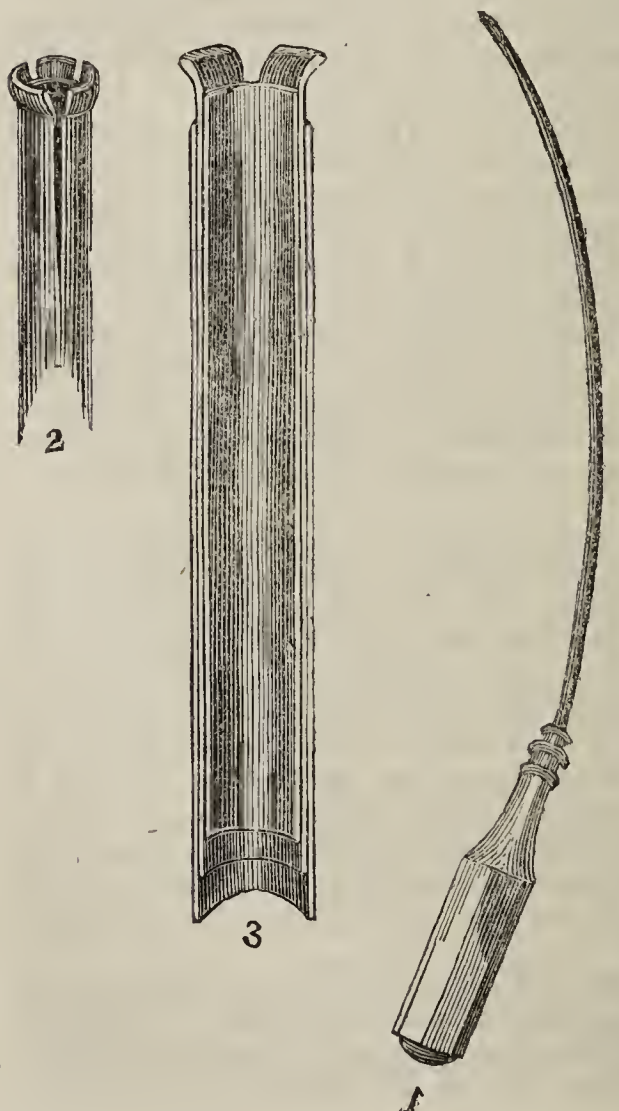


Fig 1, represents the trocar;—the size reduced.
2, the canula with its two internal tubes in situ.
3, an enlarged section of the same.

the canula into the rectum, and its adaptation to the precise spot intended to be pierced. I likewise found it necessary to adopt some contrivance which should retain the canula in the bladder during change of position or evacuation of the bowels, and which might at the same time prevent the sharp extremity of the instrument from wounding or irritating the lining membrane of the viscus. This double object has been fully accomplished by the introduction of a second tube split at its extremity into three expanding branches, each of which is furnished with a small bulb, and form together a button-like projection at the end of the first canula. A third tube is then introduced through the second to secure it in its place and to prevent the collapse of its branches.

With this apparatus the canula may be retained in the bladder for as long a period as occasion may require.

A small disc of caoutchouc around the second and third tubes, and a plug of gutta percha, renders the entire instrument water-tight, when it is considered desirable to allow the urine to accumulate in the bladder.—*Med.-Chirurgical Transactions*, 1852, *p.* 153.

99.—ON A NEW FORM OF DIRECTOR FOR THE REMEDY OF STRICTURE BY EXTERNAL INCISION.

By Prof. Syme, Edinburgh.

[Mr. Syme states that he has now operated upon eighty cases of obstinate stricture by external incision, without in any case a fatal result ensuing. He thinks the danger of the operation cannot be urged, therefore, as a plea against it. Certainly, in his earlier cases the disease returned, but he is now satisfied that it was from the incision not being sufficiently free by dividing the whole extent of the contracted part of the canal. He now proposes a modification of the apparatus, which he believes will ensure the permanent latency of the canal. He observes:]

So long as an instrument employed to explore the urethra does not pass through the stricture, it distinctly determines the seat of obstruction; but so soon as its point gets fairly beyond the contraction, unless there should be a perceptible thickening of the canal, which seldom occurs, except in its anterior part before the scrotum, there is no longer any trace of the stricture that can be detected by the most careful examination, even after the coverings of the urethra have been divided. Hence no doubt the long cherished, and still not entirely abandoned, errors, in regard to the situation of strictures, and especially the mischievous delusion of their occurring at the "neck of the bladder," in the membranous portion of the urethra, or at any point behind the bulb. Hence also the difficulty which has been experienced in passing catheters, after it seemed that the stricture was freely divided; and hence also, no doubt, the imperfect results of some operations performed by myself and others.

Having long experienced the inconvenience attending this uncertainty, as to the precise seat of the stricture at the time of operation, I tried the effect of slipping a piece of elastic catheter over the director, so as

to leave it exposed three inches from the point, and thence covered up to the handle. As this contrivance was found to answer the purpose in view completely, I had a solid steel director made of the same form, and I may now explain the mode of using it. The slender part having been passed through the contracted part of the canal, the director is confided to an assistant, who keeps it steadily pressed down upon the stricture with one hand, while he holds up the scrotum and penis with the other. The operator then cuts through the integuments and subjacent textures until he distinctly feels the guiding instrument, when ascertaining at once where the stricture is seated, he inserts his knife in the groove at least an inch below the thick part, runs it forward to the termination, and then, taking the director in his left hand, withdraws it, together with the knife, still held at the extremity of the groove, so as to divide the strictured part completely, which is shown by the thick portion of the instrument freely passing the seat of its previous obstruction, when urged towards the bladder. If the operation has been properly performed, the catheter is then passed with the same facility as in a perfectly sound urethra. During the two months that have elapsed since the adoption of this contrivance, I have employed it in six cases.—*Monthly Journal of Med. Science, Aug.*, 1853, *p.* 175.

[In a letter to the editor of the 'Medical Times and Gazette,' Dr. Henry Dick, observes that though he sincerely admires the skill and success of Mr. Syme in his operation, he yet thinks the subcutaneous incision would render it still more simple. Hoping to dwell larger upon it at another time, he scarcely more than alludes to it now. He relates the following case:]

A young Italian was under my care for a stricture in the membranous portion of the urethra. I explored the canal, and examined the form of the stricture after the method of Ducamp; I then passed a caoutchouc catheter, with its stilet, No. 1, and succeeded in passing it through the stricture; but my patient had not the opportunity of remaining long enough in England to enable me to cure his stricture by this slow method, and, having heard of Mr. Syme's operation, was anxious it should be performed: I yielded in part to his wish. Having placed my patient in the position as for lithotomy, and, having passed a grooved sound through the stricture with a scalpel, I divided the skin, making a very small opening, and in the same manner the urethra. I then introduced into the opening of the urethra a small curved tenotome, and without further division of the integument, divided the stricture from before backwards. Lastly, with the sound, I assured myself that the stricture was perfectly divided. This operation is readily imitated on the dead body. A curved needle and thread may be passed around the urethra, beneath the skin, the needle being brought out at the point of entrance. Thus, a loop will be formed, which, being tightened around a grooved staff, will perfectly represent a stricture. I term this operation subcutaneous, because it is in reality so. After the operation, the catheter was not left in the bladder, but passed when required to empty the bladder. After its use, warm water was injected. I preferred this mode of treatment for the following reasons:—When the catheter is left

in the bladder, some drops of urine will dribble along it to irritate the wound. Those who have operated for laceration of the perineum know that cicatrization is prevented, and ulceration produced by contact of the urine. Mr. Baker Brown places his patient on the knees and hands during the catheterization, to prevent the urine coming in contact with the wound. By the introduction of a catheter well adapted to the urethra, and by injection of water, I endeavour to prevent the contact of urine with the wound. The small external incision heals almost by the first intention. As to the interior wound, I would not hazard an opinion as to the time of its closure; after six weeks, however, my patient had neither pain nor difficulty in micturition; nor was there at this time sensible trace of the stricture on using the catheter. I therefore presume cicatrization to have been, then, complete. Future observation will prove which operation is the best, the subcutaneous incision or that of Mr. Syme. It will, perhaps, be objected, that, to pass a catheter daily, would cause irritation, and prevent cicatrization, or, perhaps, lacerate the urethral wound. I would reply, that the urine in passing through the urethra is a foreign agent, charged with its proper salts, which produce irritation, far different to that of a well adapted metal catheter.—*Med. Times and Gazette, May* 28, 1853, *p.* 559.

100.—CASE OF URIC ACID CALCULUS, WHICH APPEARED TO HAVE BEEN DISSOLVED IN THE BLADDER BY ALKALINE REMEDIES.

By F. A. Bulley, Esq., Surgeon to the Royal Berkshire Hospital.

[On Nov. 15, 1847, the patient, a delicate-looking scrofulous boy, was admitted into the hospital for symptoms resembling stone in the bladder, which had increased in intensity during the previous six months. The disease had been about three years in its duration. The urine contained a whitish gritty sediment, and much tenacious mucus. He had neither pain at the end of the penis, nor sudden stoppage of urine, but his previous medical attendant had satisfied himself of the presence of stone in the bladder. Mr. Bulley proceeds,]

An examination which I now made with a metallic sound, left me no room to doubt the nature of his complaint, the unmistakeable feeling of a stone in the bladder being clearly perceptible; and the patient was, therefore, other circumstances being favourable, admitted as a fitting case for the operation of lithotomy. Having, however, just previously become acquainted with the particulars of a case of stone which had apparently been dissolved by the employment of saline medicines, which I understood had been procured from a person living somewhere in Warwickshire, and having, principally through the kindness of my friend Mr. Adams, of the London Hospital, succeeded in obtaining a knowledge of the probable composition of the remedy, which I was told was generally known by the name of "Constitution Water," I determined to employ some analogous preparation in the present case, although, I must confess, but with little hopes of success.

Taking for granted that the gritty sediment, which had been occasionally observed in the urine, was principally composed of lithic acid, and having no doubt that the stone was formed of the same material, and, moreover, as the boy seemed, from his general symptoms, to be the subject of the lithic acid diathesis, which I supposed to be the only constitutional condition likely to be affected by solvent remedies of any kind—I ordered him to take the following powder, dissolved in half a pint of tepid water, twice a day, strictly enjoining him to take no other kind of fluid, with the exception of a glass of rain-water whenever he might feel thirsty, which being frequently the case from the salt drink, he generally took from a pint and a-half to two pints, and sometimes more, during the day; the use of vegetable food was strictly prohibited.

℞. Potassæ. bicarb. gr. x.; sodæ carb. gr. xij.; potassæ nitratis gr. viij.; Ft. pulv. To be dissolved in a tumblerful of tepid water, and taken twice a day.

As his skin generally appeared to be habitually dry, and secerning very imperfectly, and as the cutaneous capillary circulation was extremely languid, I ordered his body to be sponged daily, with tepid water, followed by dry rubbing; and he was made to walk briskly for an hour or two in the hospital garden twice a day.

He continued this treatment, with occasional interruptions from disorder of the bowels, for about a month, at the end of which time it was found that he had lost, in a great measure, the irritability of the bladder under which he had previously been labouring. Considerable quantities of thick gritty matter had been at times observed in his urine, which, upon examination, were found to consist of amorphous lithic acid, with some mucus, but not nearly so much of the latter as he used to pass before he came to the hospital.

His general health had improved in proportion; and, notwithstanding the occasional diarrhœa to which he had been subject, he had gained strength and flesh, and his skin had become habitually moist and perspiring, which had not been the case for a long time previous to admission; and he appeared to be gradually losing the symptoms of his disease.

Feb. 3, 1848. He has been gradually improving in his health since the last report; he has now almost completely lost the irritability of the bladder, and he passes his water, which is still, however, thick at times, without pain or inconvenience. He was therefore discharged from the hospital, with directions to continue the treatment some time longer.

April 16, six weeks since his discharge from the hospital. He says he now feels no pain, either in making water or after doing so; he sleeps well at night, and is not obliged to get out of bed oftener than any other boy in health; he looks better, and feels stronger, and goes to farm work regularly every day without inconvenience. I now carefully examined the bladder with a variety of instruments, but failed in detecting the stone; but there was a kind of hard gristly feeling of the lining membrane, near the fundus, on rotating the instrument, such as is not uncommonly met with in a bladder which has been for any considerable time under irritation from the presence of a calculus.

He was ordered to take the medicine only once a day for a short time longer.

April 18, 1850, two years and two months from the date of his discharge from the hospital, I received the following communication from the patient's mother:—"With pleasure I inform you that my son Henry is perfectly recovered." I have, since this, had no opportunity of ascertaining whether or not he has had any return of the disease.

Speaking of the so-called "Constitution Water," Dr. Golding Bird remarks:—"There can be no question of the advantage that has resulted in some cases from the use of this remedy, nor, on the other hand, can there be any doubt of the injury it has inflicted when improperly administered. The secret of its success in uric acid gravel (the only class of cases in which it should be employed) depends upon the large quantity of alkaline salt administered in twenty-four hours. Our doses are generally too small when alkalies are administered in such cases. I certainly owe the knowledge of this fact to some successful cases of the so-called "Constitution Water." I do now constantly prescribe, with very great advantage, especially in cases of pisiform uric acid gravel, in which patients will pass scores of calculi, of the size and appearance of mustard seed, at a time, in imitation of this preparation, from two to four drachms of bicarbonate of potass dissolved in thirty or forty ounces of water in the course of twenty-four hours.—*Med. Times and Gazette, June* 11, 1853, *p.* 600.

101.—*Collodium in Cases of Inflammation of the Epididymis.* By Dr. Lange, of Königsberg.—Collodium, which Dr. Piachaud ('Arch. Gen.,' Sept. 1852) recommends as extremely useful in arresting incipient erysipelas, by causing contraction of the vessels of the skin when applied externally, has been employed at Königsberg by Dr. Lange, in cases of inflammation and swelling of the epididymis. Although he is in favour of cauterisation of the scrotum with nitrate of silver, as a remedy in this affection, yet the cure is generally tedious, and the caustic requires frequent repetition. It is from these reasons that he was induced to try pencilling the scrotum with collodium, and, in five cases, he witnessed such favourable results, that he was induced to continue the practice. In three cases, a single application sufficed, and recovery took place in three, four, and six days. In the fourth, a patient, aged forty-one, addicted to onanism, suffered from swelling of the left testicle for six weeks, with slight œdema of the scrotum. He was cured in seven days, after two applications. In the fifth case, the patient had suffered from orchitis for six months; he was cured in eleven days, after three applications. Collodium was also found useful in erysipelas of the lower extremities, but not when applied to chancres or sore nipples.—*Med. Times and Gazette, May* 14, 1853, *p.* 506.

102.—*On the Diagnosis and Treatment of Hydrocele.* By E. Stanley, Esq., F.R.S.—[After reciting some cases, Mr. Stanley alludes to a simple contrivance to facilitate the examination of hydroceles, as to the transmission of light.]

The ordinary plan of taking the patient into a dark room, and holding a candle on one side of the scrotum, is troublesome, and does not always succeed. By looking through a tube, however, the end of which has been firmly placed on one side the tumour, the experiment is much simplified, as common daylight will serve, and, by the exclusion of all extraneous rays of light, several sources of fallacy are avoided. Such a tube may be constructed extempore, by rolling up a sheet of paper, or a stethoscope will serve the same purpose admirably.

By far the most common method for the radical cure of hydrocele which we see resorted to in the London hospitals is that by the injection of the tincture of iodine. At St. Bartholomew's, Mr. Lloyd is in the habit of using the ointment of the nitrico-oxide of mercury for the same purpose. Having evacuated the whole of the fluid, he introduces through the canula a probe, the point of which has been thickly smeared with that ointment, and moves it about in the interior of the sac. The plan appears to succeed very well. In the majority of cases which come under his care, Mr. Wormald prefers to resort only to the palliative treatment by acupuncture. From twelve to twenty stabs with a full-sized needle are made in different parts of the tumour, the fluid contents of which escape into the cellular tissue of the scrotum, and are absorbed in a few days. The advantages of the plan appear to be, that it involves neither pain, loss of time, nor the slightest risk of any ill consequence. Its disadvantage, of course, is, that it requires to be frequently repeated.—*Med. Times and Gazette, June* 18, 1853, *p.* 629.

SYPHILITIC DISEASES.

103.—ON THE TREATMENT OF BUBO.

By John L. Milton, Esq.

[In 1850, Mr. Milton published in the 'Lancet' a paper on the "Use of Tartar-emetic in Inflammation of the Cellular Tissue." Soon after, a pamphlet was published for private circulation only, with the results of this treatment in bubo and perineal abscess. Mr. Milton now mentions it in a more public manner. In the pamphlet alluded to he stated]

1. That bubo in its mildest form is rapidly cured by small blisters.
2. That in the acute form no effort should be spared to obtain resolution, which may in general be readily effected by full doses of tartar-emetic, as one grain over two or three hours, and the application of very hot water to the bubo.
3. That when resolution is effected, the hardening and engorgement may be removed, as in the indolent bubo, by iodide of potassium, aided by blistering, and the subsequent employment of tincture of iodine, friction *in every form* being injurious and painful.
4. That when resolution cannot be effected, the best plan is to eva-

cuate the pus by means of a needle introduced through the sound skin or at the lower side of the red halo which points out the seat of inflammation.

5. That when a bubo is not submitted to the surgeon's care till it has burst, it seems better to treat it by irrigating the surface freely with warm water, than by the direct application of stimulants, which are more painful and not so efficient.

6. That absorption of the indolent bubo may generally be effected by the use of tincture of iodine, blisters, and iodide of potassium.

I also directed attention to the facts, that the ordinary modes of procuring resolution frequently fail; that promoting suppuration, where it can be prevented, seems of questionable benefit: that cutting a bubo sometimes fails to check the advance of suppuration, while it has often been followed by the most serious results, and even by loss of life; that burning it with caustic is frightfully painful; and, finally, forming large sloughs, as recommended by Malapert, Cullerier, and Ricord, is equally barbarous and unscientific.

Such were the opinions I ventured to put forth in the pamphlet I have spoken of, and before the reader has concluded the present article, he will see that I am now labouring to extend and improve this treatment, and striving to force home the conviction that the knife ought to be totally laid aside in these affections.

Let me then call attention to—

a. The disadvantages attending the ordinary treatment of bubo, and especially *of allowing the air to come in contact with the suppurating cavity;*

b. The advantages attending an opposite plan of treatment, more particularly that of *drawing off the pus as soon as its presence is detected;*

c. And to any objections which have been, or might be urged against this plan.

a. I believe few surgeons will attempt to controvert the statement that the ordinary means of treatment frequently fail in effecting resolution in bubo. I am not the only person who has expressed an unfavourable opinion of their efficacy, and it would be an easy but superfluous task to find in surgical works, arguments not only against the sum total, but even against each separate item of the usual treatment. Now, when resolution cannot be effected a bubo must either burst or be opened.

If the former take place, there is a large suppurating cavity, which takes a long time to fill up again, throwing out for weeks a profuse discharge: a constant source of annoyance and discomfort to the patient, and ending in an ugly scar.

If opened, so as directly to expose the seat of suppuration to the air, it rapidly passes into nearly the same state. The edges of the opening ulcerate till there is a wide gap, entailing the same distressing consequences—suppuration and its attendant filth, confinement for weeks, and an ugly scar.

Should a small opening be made with the view of avoiding unnecessary pain, sinuses almost inevitably result, more particularly if the opening be

not made in the lowestpart of the swelling. Weeks and months may elapse before these heal, and often very severe measures have to be resorted to, not unfrequently with indifferent success. Buboes have even been pricked on the summit with a needle to evacuate the pus, but in the cases I have seen treated in this way, the opening remained a small, sharp-edged, circular hole, while beneath the skin, the suppuration went on unchecked till a large opening was made by nature or by the surgeon.

Had such an opening been made in the lowest part of the swelling, it would have been a considerable improvement on the old plan, as here the pus would have drained away as it formed, and thus the destructive effects which result from its being confined might have been avoided. But the most prominent part, where the skin was thinnest, was selected so that though tension was relieved, the bubo soon filled again with pus, which pressed on the cellular tissue on all sides, and burrowed far and wide. If any attempt were made with a common needle to open the bubo at its lowest part, either no pus would be got away, or else a wound be left incapable of healing by the first intention. In an abscess seated in parts where no dependent position can be obtained, it would be of no use.

[The treatment by puncture might fail, though Mr. Milton has never known it do so. Mr. South has been equally successful.]

But to be efficient, the lance-headed needle, such as was first recommended by Dieffenbach in his plastic operations, is indispensable. It should be firmly mounted in a handle, and the point should be as sharp and well-tempered as that of a cataract knife. It should be inserted into the sound skin at the lowest point of the swelling and pushed up to the pus, and as it is withdrawn, if the bubo be gently pressed, the pus will flow out. After this the opening should be thoroughly cleansed from any pus and closed. If any blood ooze out, it may safely be left adhering: blood is nature's styptic, and the best. The puncture should then be covered with isinglass plaster, collodion, or lint firmly secured; for one of the greatest points is to procure its perfect closure, and on no account should the same puncture be re-opened.

Now, in slight cases, when there is not a large accumulation of pus, if after the second, or, at furthest, the third, puncturing, the needle be again introduced, little or no pus can be obtained, but in its stead a fluid like lymph, or sometimes like synovia. In more severe cases this does not appear so early. Meanwhile the swelling, pain, and redness abate, thus showing that the whole inflammatory process has been profoundly modified, and that it is giving evidence of a tendency to revert to the second stage, or that of effusion.

When the surgeon is bent upon succeeding, he will soon find that it is necessary to "tap" the bubo as fast as it is re-filled. Although each successive puncturing produces a diminution in the quantity of pus, it must still be diligently repeated till this is *all* eradicated. I have repeatedly seen my attempts at a cure in some degree nullified by the patient's staying away in consequence of the momentary relief afforded him. Last February, a patient placed himself under my care with chancre and bubo. He was a most inflammatory subject, and a free

liver. His bowels were obstinately confined, and it was not till he had taken ten grains of calomel and six ounces of sulphate of magnesia that they were opened, while the tartar-emetic produced little or no nausea till the dose was raised to one grain and a half every three hours. Partly, perhaps, in consequence of this strange inertness of the stomach and bowels, pus formed. I drew it off on the 10th of March, and instead of returning the next day to have it done again, he quietly allowed it to burst. Fortunately, however, the puncture re-opened, owing to the friction, for he neglected to put anything over the bubo, and the pus drained away as it was formed. The result showed the advantage of having the opening at the lower part of the swelling, for while scarcely any matter found its way out by the point where it had burst, and though he took a good deal of pains to mar the cure by utterly neglecting it and giving way to intemperance, yet there was no burrowing; the bubo soon shrank, and the opening below, which had ulcerated to about the size of a sixpence, closed up last of all.

The officiousness of some patients is an evil equally to be guarded against; they will re-open the puncture to squeeze a little more matter out, and then it never heals by the first intention. Last March, a man applied to me with an abscess in the back of his left hand, which he had previously pricked on the top, without, however, finding the benefit he expected. I opened it with the needle, and closed it up. On the third day it seemed nearly well, but the same night on looking at it he thought it had filled again; he therefore squeezed the lump till he forced pus out of two of the punctures. Daily removal of the matter soon cured the abscess, but the sinuses he had made took a month to heal.

I need not dilate either on the safety or the simplicity of this plan of treatment, for it is perfectly harmless, and as simple as the most *practical* of men could desire.

I have extended the plan of puncturing to abscesses of other parts, and I may safely say, with the best results, especially in respect to those seated in the neck and axilla.

Thus, in the autumn of 1852, two young ladies were placed under my care, suffering from abscess of the neck. The first case was extremely severe, and occurred in consequence of scarlet fever. The abscess extended along the under margin, and on the left side of the lower jaw, and was red, prominent, and on the point of bursting. By immediately emptying it, and repeating this process daily, not merely were the sufferings of the patient quickly relieved, but deformity was avoided, and I am not convinced that it did not afford her the means of escaping from some necrosis of the jaw. The other case was exactly similar, but much slighter, and occurred in a healthier patient.

Puncturing has also the advantages that it may be used where the knife would be dangerous, or would not be permitted. The abscesses which attack the hand in severe weather, and which were particularly numerous last February and March, fixing upon the insertions of the great flexor and extensor tendons, were often allowed to go on till the joint near them was totally destroyed, because the patient would not suffer them to be lanced. But I have found very few object to the use of a needle, and if daily employed will often relieve cases which incision has failed to check.

The vagueness which prevails as to the indications for applying hot fomentations, or cold lotions, to swellings of this kind induces me to offer a suggestion respecting their employment.

When there is much pain hot water may be safely trusted to relieve it. When there is more heat and redness than pain the evaporating lotion may take its place. When both heat and pain are present, hot water and cooling lotions may be used. This may appear paradoxical, but I have found the best results in practice from bathing bubo, and even mere axillary abscess three or four times a day, with almost boiling water, and then covering it with a single fold of linen, on which the evaporating lotion was continuously sprinkled.—*Lancet, Sept.* 10, 1853, *p.* 239.

104.—*The Seton for Suppurating Bubo.*—M. Bonnafont, chief surgeon of one of the military hospitals of Paris, has lately proposed to supersede the ordinary modes of opening buboes by the following method: A seton, of a very few threads, is passed through the bubo in the direction of its long axis, and left for several days, until a kind of fistulous tract is established. The thread is then removed, and the purulent matter escapes by the small apertures, either spontaneously or by pressure. The advantages of this practice are, according to the author, the avoidance of the unsightly puckered cicatrix generally left when incisions are made, and the more rapid healing of the bubo.—*Lancet, July* 2, 1853, *p.* 8.

105.—*Bubo.*—Dr. Clairborne (Amer. Journ. of Med. Sc., April applies *collodion* over a bubo when there is not much local inflammation; the collodion is applied layer after layer, until considerable compression is produced. If there be any amount of inflammation, leeches are previously applied.—*Brit. and For. Medico-Chirurgical Review, July,* 1853, *p.* 279.

106.—*Chordee.*—M. Doringer (Rev. Méd Chir., xiii, 240) relates a case of chordee, in which, after trying all the usual internal remedies in vain, when the penis had become relaxed by means of cold, he covered the organ with a thick layer of *collodion,* with the effect of completely preventing the erection. Next day, however, when the collodion was removed, the erection returned.—*Brit. and For. Medico-Chirurgical Review, July,* 1853, *p.* 279.

107.—*Gonorrhœa.*—M. Alquie (Bul. de Therap., xliv. 277) speaks in the highest terms of the great utility of the tannate of zinc (1 part to 100 of water) injection employed, night and morning, in gonorrhœa, after the acute symptoms have subsided.—*Brit. and For. Medico-Chirurgical Review, July,* 1853, *p.* 281.

108.—ON THE CURE OF GLEET AND OBSTINATE GONORRHŒA.

By John L. Milton, Esq.

[In this paper, Mr. Milton renews the subject of the treatment of gleet. In Vol. xxiv., p. 350, a paper upon the same subject will be found.]

Gleet has been divided and subdivided into many varieties—rheumatic, gouty, scrofulous, dependent on an atonic or varicose state of the vessels, arising from induration or ulceration of the urethra; and in a systematic work on the subject these divisions may no doubt be adopted with great advantage; but in a paper professing solely to treat of means of cure, it will, I think, suffice to consider gleet under the head of

a Gleet dependent on structural change in the urethra or incipient stricture;

b Gleet not dependent on this state, or in which this state is not recognizable;

c Gleet arising from a disordered or diseased state of other structures, as the testicle, prostate gland, &c.

When a case of gleet comes under treatment, and nothing is found to raise any suspicion of stricture, I should in all cases be disposed to try injections of nitrate of silver, rising gradually in strength every day, so as always to produce a slight sensation of heat in the urethra. I have never found it necessary to use them weaker than gr. i., or stronger than gr. x. to ℥j.

But to do this properly, the pipe of the syringe must be at least two inches long. When a syringe of this length is used, it will often be found that the tip encounters very sensitive spots, especially on the lower surface of the urethra. According to my experience, so long as these persist the gleet will not give way.

Along with an injection of this strength, such a dose of rhubarb and potass. acetas may be given every morning before breakfast as will act twice a-day on the bowels. The less medicine, however, the better; patients with obstinate gleet are generally tired of it, and will rather allow the disease to run on than again go through the routine of pills, mixtures, draughts, &c.

In many cases this treatment produces immediate and permanent relief; in some the relief is only temporary, and the complaint soon begins to return; in others very little change seems to be effected.

In the two latter classes of cases, if there be, at the end of eight or ten days, really no fair prospect of a cure, the urethra may at once be sounded. If a stricture should be found, it is needless to say, that we must have recourse to the bougie, and that the case ceases to be one of pure gleet.

There is a state, apparently stricture in the incipient stage; it might be called the granular urethra:—The canal feels rough, and, in some places, slightly narrowed. There is pain on passing the instrument, and an obstinate purulent discharge never entirely absent. Blistering seems to be of little avail; caustic seems to have little control over these cases; and the only remedy I know of is, the persevering use of the bougie. But if only pure gleet, sometimes mucous, sometimes purulent, be met

with, it will, in almost every case, yield to a blister; very rarely does it ever require a second. Blistering is, I may now safely say, the safest, quickest, and most efficacious remedy of all that have ever been proposed. Those who have had numbers of these cases under their hands, and felt the constant disappointment which the use of every other remedy brings with it, will soon appreciate its value.

I have heard it condemned, as a violent, painful, unpleasant remedy. I deny it. Apart from the fact, that it is neither so violent nor so painful as many other remedies which have been employed, (though this would not be saying much for it), it is not so unpleasant as many remedies which good surgeons constantly employ, such as cauterizing the urethra, a remedy laid down on high authority; and, what is more, I deny that, with ordinary care, and in ordinary cases, it is either very violent or very unpleasant.

I appeal to the reslts of experience, to the fact, that, while it has never failed in a case of gleet uncomplicated with change in the urethra, it has never, in any case, produced any disagreeable results, except a few boils. I appeal to the fact that patients cured by it, of gonorrhœa and gleet in all stages, have, on being a second time infected, of their own accord, blistered themselves or come to me a second time to be blistered.

Why should surgeons hesitate to blister in gleet? They do not hesitate to blister the vicinity of the eye, the face itself. Parts of the frame equally as tender, are constantly blistered as a matter of course: why not the vicinity of a gleet?

Why should it not cure gleet? Does any remedy act so efficacious in many chronic discharges? Why should not gleet yield to it? Has it ever seriously entered the head of any one in the habit of observing, to dispute its value in these cases? Then why here?

After this peroration, let us come to the employment of it. For the mode of applying the blister, let me refer the reader to my paper in the 'Medical Times.' (See RETROSPECT, Vol. xxiv., p. 351.)

For three or four days after the application of the blister, the quieter the patient is the better. So soon, however, as the blistered surface begins to heal up, a few mild injections may be given. The best kind have always appeared to me to be those of sulphate of zinc in the following form:—

℞. Zinc. sulph. gr. x. ad ℈j; sp. camph. ♏xx.; aquæ destil. ℥j. A teaspoonful to be used three times a day.

Here, as in every stage of gonorrhœa, the bowels should be kept gently open; the diet should be light; quiet and abstinence enforced. Under this treatment, a cure is frequently effected in six days from the first employment of a blister, often in less. and occasionally, in some long-standing cases requiring a second blister, it has extended over a fortnight.

The cleanest, most painless, and most certain plan of blistering seems to be that with Mr. Brown's blistering tissue. This chemist has also invented a dressing tissue which is extremely cleanly and convenient. It is highly desirable, that some such process should be extended to the oxide of zinc. What a step in the right direction since the days of Cirillo's filthy and painful blistering ointment of corrosive sublimate!

Now and then it will happen, that the patient is mortified and surprised to find the discharge re-appearing at the very moment he thought all gone. Thus, on the third day, there may be no discharge, and on the fourth there is a good deal. But this generally subsides as rapidly as it appeared, if the patient will only be quiet, and abstain from tampering with it.

Whatever means be adopted, the complete extinction of the disease must be made a *sine quâ non*. From the time of Jesse Foot,—perhaps earlier,—it has been an admitted fact, but not always acted on, that the cure, to be permanent, must be complete, before the surgeon remits the least in his exertions.

Finally, I may state, that, in some obstinate cases of leucorrhœa, I have used blisters with great success, but my observations are not yet sufficiently complete.—*Med. Times and Gazette, May* 21, 1853, *p.* 519.

DISEASES OF THE SKIN.

109.—ON DISEASES OF THE SKIN, WITH ESPECIAL REFERENCE TO THEIR CONSTITUTIONAL ORIGIN AND TREATMENT,

By Thomas Hunt, Esq.

[The proximate causes of chronic eruptions may be either impaired or abnormal vascular action, or a vitiated state of the blood. In some cases we may have these combined. The following remarks apply to cutaneous diseases, uncomplicated with any disease of the viscera:]

1. There is a large class of cutaneous affections which simply depend upon impaired vascular action of the capillary system, or a generally languid circulation. These exhibit various forms of eruption, but in all of them the health appears tolerably sound, although it often happens that the bowels are torpid. Prurigo is the most common form of eruption, but lichen and pityriasis occasionally depend on a similar cause. The distinguishing character of the eruption is that of dryness; neither serum nor purulent matter are contained in the papulæ. The general signs are a weak and slow pulse, a pallid skin, impaired appetite, and intolerance of cold and heat. The beat of the heart is generally feeble, and the respiration slow. In cold weather the extremities cannot be kept warm. Papular or scaly diseases, depending only on this state of the circulation, will sometimes yield to warm baths of fresh water, and warm aperients, with a generous diet. These failing, the chloride of arsenic I have found to be the best remedy. The chloride of arsenic is a preparation not much known to the profession, but it has long been used by a few practitioners under the name of De Valangin's "solution of solvent mineral." I had the pleasure of bringing this medicine before the notice of the profession a few years ago, in a paper published in the 'Transactions of the Provincial Medical and Surgical Association,' in which, on the testimony of Dr. Webster, of Dulwich, and of other practitioners, I described it as a very eligible preparation. Since then, I have had the satisfaction of seeing it introduced into the London Phar-

macopœia under the cognomen "*liquor arsenici chloridi.*" I have been, of late, so much pleased with this medicine, that for more than twelve months past I have never once prescribed Fowler's solution, which is certainly much more liable to decomposition, and is therefore, in some degree, uncertain in its effects. It should be noted, however, that the dose of the liquor arsenici chloridi is not from three minims to ten, as it is described in our rudimentary works on pharmacy, but from ten minims to twenty, three times a day. I have found twelve minims about equivalent to five of Fowler's solution. It seldom or never irritates the bowels, especially if administered with or immediately after a meal. It is scarcely necessary to adduce cases illustrative of this simple plan of treatment, but these are the cases in which arsenic is most useful and best borne by the patient. After a time it infuses a sense of warmth into the extremities, and a general glow over the whole surface; when this is effected, the disease more or less rapidly subsides.

2. Increased momentum in the circulation of the blood, with or without local congestion, is a more frequent proximate cause of disease of the skin than the opposite condition. The more severe forms of lepra and psoriasis, as well as of lichen, are frequently (not invariably) associated with this state of the circulation, but the more usual form of eruption is eczema. When this disease becomes unusually severe and persistent, it will generally be found that there are symptoms indicative of increased vascular action, and some degree of congestion in the larger viscera. The pulse is remarkably firm and incompressible, and remains so after a very considerable amount of depletion has been practised, which, so far from reducing the strength of the patient, very usually increases it, rendering him more lively and active, and capable of an increased amount of labour without fatigue. I am the more anxious to note this, because it is becoming the fashion to decry depletion, and many otherwise excellent practitioners use it with the extreme of caution, and appear to have no satisfactory means of measuring its amount, and adapting it to the case. It is indeed but in a small proportion of cases of skin diseases that active depletion is required. Very frequently tonics and a liberal scale of diet are the things most clearly indicated; yet there are numerous cases, especially in the order *vesiculæ*, in which the torments of the patient cannot be relieved but by a free abstraction of blood, a severe administration of purgatives and antimony, and a very restricted diet: and this system must be pursued without regard to any limits but those indicated by the pulse and the skin, and the general tone of the system. In these cases relief follows depletion, as a spring rises when a load is removed. The features, which are generally dull and heavy, and of a dingy hue, become bright and clear as the treatment proceeds, and the patient frequently remarks that he finds himself stronger on bread and water than he was on meat and beer. During the earlier stages of the treatment the disease often becomes worse, every dose of medicine appearing, as patients express it, "to throw it out;" but it at length subsides rapidly, and gets well either spontaneously or under the influence of alteratives.

The simple principle of successful treatment consists in regarding the skin disease as not the thing to be treated, but simply as a sign of some-

thing wrong elsewhere, and when this is rectified by ordinary treatment the skin recovers immediately. The only difficulty in the diagnosis is—that the patient complains of the skin only, and requires to be questioned and cross-questioned before the real condition of the constitution can be ascertained.

It remains to be observed, that nearly all the forms of cutaneous eruption attended by the secretion and discharge of serous or purulent matter, will yield to this kind of simple treatment without arsenic, mercury, or any other powerful alterative. On this point I have seen no reason to alter the opinion I published six years ago, that, "by rectifying what is obviously wrong in the general system, we put the patient into a condition in which the local disease has a chance of getting well; and sometimes this is all we have to do; the *vis medicatrix naturæ* will accomplish the rest." These few words present the outline of all I shall have to advance in these papers; but as, by reason of their fewness, they have been overlooked by hasty readers, by whom I have been ignorantly charged with administering arsenic indiscriminately, and by holding it out as "a panacea in skin diseases," I deem it a duty I owe to myself, as well as to the profession, to illustrate by cases what it was I wished to be understood by the phrase, "rectifying what is *obviously* wrong in the general system," particularly as in that phrase is comprehended all that is requisite in the treatment of the ordinary forms of cutaneous disease.—*Lancet, Oct.* 1, 1853, *p.* 315.

110.—THE PATHOLOGY AND TREATMENT OF DISEASES OF THE SCALP, POPULARLY KNOWN BY THE NAME OF RINGWORM.

By Dr. William Jenner.

[The difficulty of diagnosing eruptive diseases of the scalp, is owing partly to their similarity to each other and partly to the different names given by different authors to the same thing. Popularly, ringworm is looked upon with the greatest anxiety and annoyance, as the term is supposed to represent a very obstinate and contagious disease.]

What is popularly meant by ringworm was by some of the older writers on skin diseases expressed by the word tinea; but the technical name being found, as our knowledge advanced, to have no definite signification, gradually fell into disuse.

It has been recently proposed to employ this word tinea again, and to give to it a precise signification. Under the generic name tinea it is proposed to include all diseases of the hairs produced, kept up or attended, by the development of parasitic plants.

In this genus are included the following species: Tinea favosa; Tinea tonsurans; Tinea decalvans; Tinea sycosa.

It is to this genus tinea, and to these species of that genus, that I desire especially to call your attention; and I am confident that if you remember the names of the species of tinea I have just repeated, if you learn what I am about to tell you of those species, and observe well the things

I shall presently show you, the remaining and more common diseases of the scalp will be mastered in a very few hours spent in the out-patient's room.

Tinea Favosa most commonly affects the hairy scalp, but now and then it is found on other parts of the surface. It is characterised by thick, dry, yellow crusts, which, if small, are circular in outline and depressed in the centre, cup-shaped. Passing through the centre of each of these crusts, is a hair.

If the crusts are very large they have an irregular shape; but still they indicate their origin from distinct centres by the semicircular outline of the masses which project from their margin. These larger, irregularly-shaped crusts, are pitted on the surface, and, from their fancied resemblance to the cut surface of a piece of honeycomb, the disease has received the name of favus.

The margin of the large crusts rises considerably above the level of the cutis; internally, they seem as though half-buried in the substance of the cutis. Carefully detach the crusts from the cutis, and a distinct layer of epithelium is found below them; examine the surface of the smaller crusts, and you find a layer of epithelium cover them.

The hair, at an early period of the disease, can be pulled out from the centre of each little crust with great facility; subsequently it falls of from the diseased parts, and permanent baldness results.

The crusts, then, of tinea favosa are remarkable for their thickness, dryness, brittleness, and depressed centre. Tinea favosa it not a pustular disease, but it is said, by those who have seen much of it, (it is a rare disease in London), to be often consecutive to eczema, impetigo, chronic lichen, and herpes circinatus; pustules are sometimes formed subsequently to the tinea favosa, in consequence of the inflammation excited by the crusts, and the injury inflicted on the scalp by scratching.

Tinea Tonsurans is often mistaken for herpes circinatus of the scalp, with which it is now and then conjoined. It is characterised by pallor, decolorization, and brittleness of the hairs, and the presence of thin white powdery scales around the base of the hairs, and on the skin between them. The diseased hairs have been likened to "tow." "They are," Mr. Wilson says, "remarkable for their bent and twisted shape, and resemblance to the fibres of hemp in colour and apparent texture." Their brittleness is sometimes such, that every hair on the affected spot is broken off just above the surface of the skin.

In *Tinea Decalvans* the hair falls out rapidly from one or more circular spots, leaving a smooth bald surface. There is no eruption of any kind,—no crusts, no scales.

Tinea Sycosa is characterised by inflammation of the hair follicles. Sometimes the inflammation leads only to the effusion of serosity, and the exudation of lymph around and into the capsule of the hair. At other times, and more commonly, pus is formed, and then, when the pustule breaks, a brownish scab is formed on the surface. The usual seat of tinea sycosa is, the chin, upper lip, and sides of the cheek. I had a case lately under my care in which the pustules occupied the inner surface of the nares,—that part from which the hairs spring that protect the orifice of the nose. Tinea sycosa rarely occurs on the scalp, and

it does not spread circularly; so far as I know, the name of ringworm has never been applied to it. I mention it to you to-day, although I have no example of it among my patients to show you, because of its relation to the species of tinea of which we have examples before us.

You will have remarked, then, from the characters of the species of tinea I have mentioned, that—

Tinea favosa is especially characterised by its crusts.

Tinea tonsurans is especially characterised by decolorization and brittleness of the hair.

Tinea decalvans is especially characterised by baldness, not preceded or accompanied by an eruption.

Tinea sycosa is especially characterised by inflammation, tenderness, hardness, and suppuration of the hair follicles.

I told you that these diseases are arranged together in one genus, because in all a parasitic plant is developed in connexion with the hairs. Now, the plant present is different for each species of tinea; and the situation occupied by the parasite is also different in each species of that genus.

In tinea favosa, the parasite is the *achorion Schönleinii*. This plant has mycelium, sporule-bearing branches, and sporules. The sporules are round or oval, and their diameter varies, according to Gruby, from 0·003 mm. to 0·01 mm.

The vegetable growth is first perceptible between the layers of the epithelium, just at the orifice of the hair follicle; from this point it may spread downwards between the hair and its capsule, and upwards around and in the substance even of the hair.

Such of you that visited Ward 4 during the time Jacobs was in the hospital, had frequent opportunities of seeing the mycelium, the sporule-bearing branches, and the sporules of the *achorion Schönleinii*. You will recognise it in these very excellent drawings of Robin.

In tinea tonsurans, the parasite is the *trichophyton tonsurans*. This plant is composed of spores only; the spores, however, are occasionally somewhat elongated, and arranged in a linear series. They are round or oval, and their diameter varies from 0·003 mm. to 0·01 mm.

The primary seat of the trichophyton tonsurans is the root of the hair; subsequently, it extends up into the substance of the hair, and even outwards, according to Basin, on to the skin between the hairs. I have under the microscope some hairs removed from the head of one of these children. You will see in one specimen the spores in the hair follicle; and, in another, the hair split up with the spores among the fibres, as figured in this plate by Bazin, and in this more highly magnified drawing by Robin.

In tinea decalvans, the parasitic vegetable is the *microsporon Andouini*. This plant is formed of branch filaments, on which the spores are developed. The spores are very small—from 0·001 mm. to 0·005 mm. The seat of the growth is the outside of the hair; it forms a sort of sheath around the hair, from the surface of the skin upwards, from 1 mm. to 3 mm. Gruby first described this plant, and its relation to tinea decalvans; and Robin says, he can confirm the accuracy of Gruby's description.

In tinea sycosa, the parasite is the *microsporon mentagrophytes*. It is

also composed of filaments and spores; but the spores are larger, and the filaments broader, than those of microsporon Audouini.

The seat of the growth is the hair follicle between the hair and the capsule.

I have told you the names I would have you employ to signify the diseases I have described and demonstrated to you; but you ought also to know the names employed by the writers on skin diseases most popular in this country, to signify the same things.

Tinea favosa, then, is called Porrigo favosa by Willan and Bateman; Favus by Dr. A. T. Thomson, Simon, and many other writers.

Tinea tonsurans is called porrigo scutulata by Willan, Bateman, and Dr. A. T. Thomson; Herpes tonsurans by Cazenave; and Trichinosis furfuracea by Mr. Wilson.

Tinea decalvans is called Porrigo decalvans by Willan and Bateman; Vitiligo of the hairy scalp by Cazenave.

Tinea sycosa is called Mentegra by Willan and Bateman; Sycosis by Mr. Wilson.

As to the etiological relation of the parasite to the disease, it appears, that the spores of the vegetable growth require for their development a peculiar nidus. I say so, bacause all persons who mix with children suffering from tinea do not have the disease. But if a soil highly favourable to their growth exists, then a spore having found its way on to that soil developes and forms other spores, and so the parasite spreads over the surface of the individual more or less rapidly, according to the more or less favourable nature of the soil.

[As tinea commonly appears amongst strumous and dirty children, we must first in the treatment enforce cleanliness, then strengthen and improve the general health of the patient, and then endeavour to destroy the parasite. The two first intentions are to be fulfilled on common principles, the last by a series of remedies termed 'Parasiticides.' Corrosive sublimate and acetate of copper have been much used, but there are many serious objections to their use, one of which is, that the hairs have to be forcibly removed from the affected parts.]

It is highly probable that, if sulphurous acid be employed as a parasiticide, epilation will be found to be altogether unnecessary to its complete action. This agent was first introduced to the notice of the medical officers of the hospital, by Professor Graham, as a possible remedy for cholera, at the time that disease was said to have its origin in the presence of an entophyte in the intestinal canal. It was first employed by myself to check fermentation, and to destroy the torulæ cerevisciæ and sarcinæ Goodsirii. * When lecturing on this subject, some time since, I expressed myself thus:—"Considerable benefit may be anticipated from the employment of sulphurous acid in all diseases attended with the development of parasitic plants. I would especially mention porrigo."

* Several medical men have lately administered the hyposulphite of soda, instead of the sulphite; but the latter is the preferable salt, and for this reason, that when the hyposulphite is decomposed by the hydrochloric acid of the gastric juice, not only is sulphurous acid generated, but sulphur is precipitated,—a substance it is very undesirable to have in the stomach in some of these cases.

The case I am about to read to you, of Hyman Jacobs, proves, that, in regard of tinea (porrigo) favosa, these anticipations have been fully realised; while the case of the girl now in the room, and who is still under treatment, renders it highly probable that the beneficial effects of this parasiticide will be as manifest in tinea decalvans as they are in tinea favosa.

In some forms of thrush, too, I may mention that it acts most rapidly, one application of a solution of sulphite of soda (a drachm to an ounce of water) sufficing to remove the disease from the mucous membrane of the mouth in twenty-four hours. The secretions of the mouth being acid, the salt is decomposed, and sulphurous acid is set free; in this, as in all other cases, the sulphurous acid is the active agent in the destruction of the parasite.

Hyman Jacobs, aged 27 years, a Jew pedlar, a native of Amsterdam, and resident in London fifteen months, was admitted into the hospital on March 21, 1853.

He was, as most of you remember, a man of cheerful disposition, dark complexion, rather short, muscular, moderately stout; in fact, he looked generally in robust health. His habits were those of his class; he slept in the low common lodging-house, fared badly, rarely eating meat, and, judging from his appearance, was not very cleanly in his person.

He affirmed, and I believed him, that he was temperate in regard of the use of alcoholic liquor. His general health, he said, had always been good.

The scalp affection was of nine years' duration at the time he came into the hospital. He had been in many hospitals, but had never derived any marked benefit from treatment. When Jacobs came under observation, his condition was as follows:—

Cerebral, circulatory, respiratory, and digestive functions healthy in all particulars.

The whole of the scalp, excepting the margin, was covered with the crusts of tinea favosa. The largest crusts were of a greyish yellow colour, of the consistence of dried putty or mortar, and brittle. Their thickness generally was considerable. Where thickest, the surface of the crust was below the level of the cutis; so that it looked, at the first glance, as if the latter had been partially destroyed by ulceration. The surface of these crusts was very irregular; it had a pitted, worm-eaten, or eroded appearance. At the edge of the large, irregularly-shaped crusts, were many small circular crusts, depressed in the centre. A hair passed through the centre of each of these small crusts. When the crusts were forcibly detached from the scalp by mechanical means, the exposed surface of the cutis was very red and raw.

The head itched much; and, though scratching gave considerable pain, it was evident, from the traces of blood on the surface, that he had been applying his nails to the part.

The odour of the head was very offensive, something like that emitted by mice, only, as one of you remarked at the time, sweeter and more nauseous. Scattered over the trunk and extremities were a very large number of circular favus crusts. There were as many as forty on the back alone. The smallest of these appeared, when seen through a lens,

to be constituted thus: in the centre was a hair, around and touching that a brownish-yellow crust, and around that again a dusky-red halo; the diameter of the whole not exceeding two-thirds of a line. On the back no crust was more than one-fourth of an inch in diameter; on the leg there was one one-third of an inch in diameter. These crusts were circular, raised about a line above the level of the cutis, hard, dry, and appeared as though made up of concentric rings of pale, greyish-yellow, and brown colours alternating. The surface of these crusts was readily detached, and then a cup-shaped cavity was exposed, filled with a brimstone yellow powder. The base of the crust being removed, the surface of the cutis, from which it had been detached, was raw.

We saw, you may remember, the mycelium, sporule-bearing branches, and sporules of the achorion Schönleinii, when portions of the crusts, or of the yellow powder, were placed under the microscope.

No treatment was adopted for some time after the man's admission. On April 13th his state was exactly the same as when he entered the hospital. Rags, wet with a solution of sulphurous acid, were now ordered to be kept constantly on the scalp; the head to be covered with an oil-silk cap.

On April 18th, large quantities of crust had separated from the scalp, and *those that remained attached had entirely lost their yellow hue; they were now of a dirty brown colour.* All itching of the scalp ceased shortly after the application of the sulphurous acid. No sulphurous acid had been applied to the crusts on the trunk and extremities, and they had still the characters they presented on the man's admission into the hospital.

A piece of lint, wet with sulphurous acid lotion, was applied to one of the largest crusts on the leg.

On the 22nd April a mere trace of the favus crust remained on the scalp; but the surface of the cutis was red, and there was an inflamed papula near the vertex. Thinking this condition might be partly due to the acid, which was a very strong solution, I ordered its use to be discontinued for twenty-four hours. The crust on the leg to which the sulphurous acid was applied on the 19th, had separated; the exposed surface was red, but not raw. *Two favus crusts which were seated in the vicinity of that to which the acid was applied on the 19th, were observed to be turning brown; subsequently they dropped off spontaneously.* The effect of the sulphurous acid gas on these two patches is of great interest, as illustrating the mode of action of the solution. The crust on the scalp turned brown shortly after the acid was applied to them, and before they separated from the cutis.

On the 29th April the lotion was discontinued, and zinc ointment applied to the scalp.

On May 2nd the head was free from crusts, but the scalp was still red, and several inflamed papula were seated on it.

On May 9th the skin of the scalp was here and there more natural in hue, and one or two papulæ had suppurated; the pus was healthy in appearance, and there was no trace of the parasitic plant to be detected by the microscope.

On the 18th, the head continued free from favus; the scalp was much

less red; the hair was growing. As the crusts on the trunk and extremities were still in the same state as on the patient's admission into the hospital, he was immersed, about nine in the evening, for half an hour, in a full-sized tepid bath, containing sixteen ounces of saturated solution of sulphurous acid; no friction was employed. During the night all the crusts save three fell from the surface.

On the 20th he was again immersed in the acid bath, and the next day no trace of a crust was to be found on the trunk or extremities. My notes say:—"No fresh crusts on head; a small pustule occasionally appears. and dries up in two or three days, and then disappears entirely; the skin of the head generally is much paler and more healthy in aspect."

31st. The scalp was still paler than at the previous report. There were only two small pustules on the scalp. By the microscope, no trace of the parasite could be detected. The skin generally appeared healthy; and, on June 2, Jacobs left the hospital, at his own desire, to return to Holland.

I cannot conclude without expressing my confident belief, that a very great advance was made in pathology when the vegetable nature of the diseases I have to-day referred to, as well as of some others, was demonstrated; and my equally confident belief, that the foundation for a very great advance in therapeutics was laid when Professor Graham introduced to notice the power of sulphurous acid to destroy vegetable life, and explained how it could be given internally without injury to the patient.

Note.—The solution of sulphurous acid I have used is made by passing a stream of the gas through water till the latter is saturated. Of this saturated solution, two ounces may be added to six ounces of water, to make the lotion.

The saturated solution of sulphurous acid I have employed has been either prepared in the Birkbeck Laboratory of University College; or procured from Button's, Holborn; Hopkins and Williams, New Cavendish-street; or Burcham's, Albany-street.—*Med. Times and Gazette, August* 20, 1853, *p.* 181.

111.—ON EPIPHYTES AND ENTOPHYTES.

From a Review of Dr. Robin's 'Natural History of the Parasitic Vegetables which grow on Man and on Living Animals'; and of Dr. Bazin's 'Researches into the Nature and Treatment of Tinea:' by Dr. E. A. Parkes.

[It may be observed that all the vegetables which grow on living beings are low forms of Algæ, or Fungi.]

Most of these plants are composed of simple cells, or of cells placed side by side; the unicellular algæ being distinguished from the unicellular fungi by containing chlorophylle or some analogous substance, and usually one or many coloured vesicles. The more highly formed algæ are composed of interlaced filiments (*Trichomata*), simple or ramified,

cylindrical or flattened, and containing coloured molecules; and of a reproductive system—viz., vesicles (*sporangia, conceptacles*) and spores (*sporidia*). The fungi are represented by filaments, at first simple, then ramified, and formed by a single elongated cell, or, more rarely, by several cells placed end to end (*mycelium*). The reproductive system is constituted by spores, which are seated on a receptacle, either at once or by the mediation of certain special structures, or are contained in a distinct vesicle (*sporangium*).

It would lead us too far to go into the minute anatomy of these plants, nor shall we attempt an account of the various genera and species which are found on the lower animals. We shall content ourselves with enumerating those which are found on the bodies of men.

The conditions of growth of the parasitic plants on human bodies are the same as in all other cases. Whenever the normal-chemical processes of nutrition are impaired, and the incessant changes between the solids and the fluids slacken, then, if the parts can furnish a proper soil, the fungi will appear.

The soil on which these plants grow is for the most part composed of epithelium or cuticle, acid mucus, or exudation; acidity, although favourable for their growth, is not indispensable, since some of the cryptogamia grow in an alkaline or neutral ground, as on the ulcerations of the trachea. On the skin, and in the buccal and pulmonary cavities, the plants are exposed to atmospheric air, and many of the fungi absorb oxygen, and emit carbonic acid. In the intestines, the nature of the gas is somewhat different; but some species grow here also. Humidity and warmth are important conditions of growth, and these, of course, are always to be found in connection with the animal body.

An useful division of the subject for our purpose is afforded by the anatomical seat of the cryptogamia on the skin, or on the mucous membranes of man.

A. Cryptogamia on the skin.—Ten varieties have been noted in this locality. We shall enumerate them in the order in which they are given by M. Robin.

1. *Trichophyton tonsurans* (Malmsten).—Syn. *Trichomyces tonsurans; Mycoderma of the Plica polonica; fungus of the hairs in Herpes tonsurans; fungus of Porrigo scutulata; Achorion Lebertii; fungus of the Teigne tondante* (Bazin); *Rhizo-phyte* (Gruby).—This fungus was discovered and described in 1844 by Gruby, in the disease called by the brothers Mahon 'Teigne tondante;' by Cazenave 'Herpes tonsurans;' by Erasmus Wilson 'Trichoses furfuracea,' (one of the diseases called ringworm and porrigo scutulata in this country). It exists also, as pointed out by Günsberg, in the plica polonica, although the two plants were formerly described as different.

The tricophyton is formed by oval transparent spores, which give rise to articulated filaments. Its anatomical seat is in the *interior of the roots of the hairs*. The hair and fungi simultaneously increase; the former seem larger than usual, are paler in colour, loose their elasticity, soften and break off when they have risen some one or two lines above the surface of the scalp; in the short cylinder then left the fungus grows still more rapidly, so that the normal structure of the small stump of

hair soon becomes indistinguishable. Sometimes the hair breaks off before emerging from the skin, and the fungus, epidermis, and sebaceous matter fill the ends of the piliferous conduits, and form the little prominences which can be seen by the naked eye in this disease, and give the skin a rough, anserrine appearance. The sporules and mycelium of the plants can sometimes be seen, in the form of a white powder, on the roots of the broken hairs; sometimes the cutis becomes congested and thickened, and then the plant is mixed up with scales of epidermis, with fatty and albuminoid granules, with pus, &c.; and crusts are formed of greater or less thickness, in which the growth of the fungus can go on.

MM. Robin and Bazin adopt unreservedly the opinion that the trichophyton is the cause of the disease known under the various names above given; and each author relates examples of the contagion of the disease by transmission of the spores. Bazin has made the very important observation that the same disease will attack horses, and can be communicated from them to men. Both Robin and Bazin, however, admit that there is some condition of the hairs (dependent, no doubt, on constitutional causes) which is essential for the growth of the plant, as sometimes the disease disappears—i. e., the fungus dies—without treatment.

The *diagnosis* of this disease is extremely easy. The usually round bald patches, with the little elevations caused by the swollen roots, and the dryish scales of epidermis covering the skin more or less, and accumulating round the elevations, are very distinctive marks. Occasionally, when the cutis is more congested, and the crusts are thicker from abundant cuticle and exudation, some doubt may exist, but then the trichophyton can be usually found in the crusts.

The *treatment* of this species of ringworm has been long one of the most difficult points in dermatology. Its principles, however, are now well understood, and few cases resist the proper measures. The essential point is to apply to the roots of the hairs a preparation which may destroy the trichophyton; if this can be done, the disease is cured. It is first of all necessary to remove the hair; this is in part generally accomplished before the case comes under treatment, by the course of the disease; if it has not been sufficiently done, 'epilation' can be accomplished by a chemical agent, or by extraction with pincers. M. Bazin recommends the ointment given below,* or the oil of cade, which appears to be the best depilatory known, or with these means epilation with the pincers may be combined. The removal of the hair permits a "parasiticide" solution to be applied to the hair-follicles, within which are the prolific spores of the fungus. For this purpose M. Bazin recommends either a solution of bichloride of mercury (1 part to 250 of water), or an ointment of the acetate of copper (1 part to 500 of lard). We have used also, with excellent effect, a solution of the pernitrate of mercury, about 1 part to 30 or 40 of water; this is, however, a very powerful remedy, and is to be cautiously used, as it easily blisters the scalp. We have used also an ointment composed of sulphate of copper (1 part), alum (3 parts), and lard (20 to 30 parts according to the age of the patient). Probably, however, a better parasiticide agent than any of these is the sulphurous acid, which we have seen Dr. Jenner employ

* Lime and carbonate of soda, of each one part, lard 30 parts

lately in a case of favus, with astonishing results, and which doubtless would be equally successful in tinea tondens. Chlorine water might also possibly answer the same purpose.

With respect to the name of the most common disease in which the trichophyton tonsurans appear, the term used by Cazenave (herpes tondens) is extremely unfortunate; no doubt vesicles are sometimes seen, and sometimes the cryptogamic disease succeeds to true *herpes circinata* of the scalp, but in many cases there are no vesicles at all throughout the whole course of the disease. The term used in this country, *porrigo scutulata,* is inconvenient, as it is applied with greater justice to favus. The old term of tinea is, after all, by far the best, and the specific affix tondens expresses well one great feature of the disease, the baldness arising from the brittleness of the hairs.

[The second species, which has been little studied, is the *Trichophyton sporuloides.* The 3rd is the *Trichophyton ulcerum.* M. Lebert has described a fungus in the crusts covering an atonic ulcer of the leg. The 4th is the *Microsporon Andouini,* present in the disease termed Porrigo decalvans by Willan. The 5th is the *Microsporon mentagrophyta,* found in a case of mentagra. This disease is easily cured by epilation, and subsequently using a lotion of bichloride of mercury. The 6th, the *Microsporon furfur,* has been discovered in the Pityriasis versicolor of Willan. The 7th, the *Achorion Schœnleinii,* is the most important, being the fungus of Favus.]

Schonlein was the first to suggest that the honeycomb, or yellow favous crusts in the so-called porrigo lupinoso (Willan) and porrigo scutulata, were constituted by a vegetable growth. This has been repeatedly confirmed, and many excellent descriptions have been given of the disease, now called indifferently favus, tinea favosa, or porrigo scutulata; but none, we think, better than that which is contained in the work before us.

M. Robin believes he has discovered that the primary seat of the achorion is in the depth of the hair follicle, against the hair, and, as well as we can understand the description, outside the layer of epithelium which covers the root of the hair, and which forms "the inner root-sheath' of Kölliker. In this observation, however, he has been anticipated by Wedl, who has pointed out that by using a concentrated solution of liquor potassæ, to make the parts transparent, the fungus is found in the follicle round the hair at the place where it passes through the epidermis. In addition to this, the plant is found in depressions on the surface of the skin, forming the yellow honeycomb-like masses which give the specific name, favus, to the disease; and which, from their frequent buckler-like shape, suggested the term 'scutulata.' The development of the achorion in this situation is described by Robin after Remak and Lebert. A cuticular elevation is seen, beneath which is a small favus; when the cuticle is raised, a drop of pus sometimes issues; hence the error of those who have considered this disease always pustular; generally, however, (Robin, Simon, and Hoefle), there is no pus or liquid of any kind; the plant grows, and the cuticle over it (supposing it has not been forcibly detached) finally separates, leaving the favus exposed to the air.

M. Robin does not notice the important statement of Simon, that at first there is at the point where the favus is about to form, only an increased secretion of epidermis; he notices briefly the fact, that sometimes the under surface of the favus is coated by cuticle, which separates it from the compressed and attenuated derma.

The structure of the favus is given at length by both authors, but it is scarcely necessary to do more than notice that Robin, in addition to the mycelium, the spores, and the receptacles of the achorion, describes a finely granular amorphous layer, which forms the external coat of the favus, and is the representative of the amorphous 'stroma' which often accompanies the mycelium of algæ and fungi. In the favus, also, as we shall presently see, another and distinct fungus can sometimes be found.

M. Bazin describes the favus under three heads, which are fundamentally identical, and different only in respect of form.

1. Favus urceolaria dissemina: this corresponds to the porrigo favoso, Favus dispersus, Teigne alveolaire, of other authors.
2. Favus scutiformis: this is the porrigo scutulata, or favus confertus.
3. Favus squamosa; a form usually called scutulata, but distinguished chiefly by the irregular distribution of the achorion, and by the furrowed masses formed by the fungus, the hairs, epidermis, and exudation.

The treatment of favus recommended by Robin and Bazin is epilation, and the application of the corrosive-sublimate solution, or of acetate-of-copper ointment (1 part to 500 of lard), to kill the plant still remaining adherent to the hair follicle. We suspect that the sulphurous acid employed by Dr. Jenner will be found a more effectual application than either of these two. [The remaining species of this division are unimportant.]

B. Cryptogamia on the Mucous Membrane.—The plants forming on mucous membranes, or in the contents of cavities lined by mucous membrane, are of less interest than those which grow on the skin, as in most cases they are decidedly only secondary. We shall merely enumerate them.

1. *Cryptococcus cerevisiæ.* Kutzing. (Syn. Torula cerevisiæ—the yeast-plant), in the bladder, stomach, intestines, &c.
2. *Merismopœdia ventriculi.* Robin. (Syn. Sarcina), in the stomach, intestines, &c.
3. *Leptothrix buccalis.* Robin. (Syn. Alga of the mouth.)
4. *Oscillaria* (?) *of the intestines.* Farre.
5. *Leptomitus urophilus.* Montagne. (An alga, described as forming in the urine. It has as yet been scarcely studied.)
6. *Leptomitus* (?) *Hannoverii.* Robin. (Alga found by Hannover in the pharynx and œsophagus.)
7. *Leptomitus* (?) *of the uterus.*
8. *Leptomitus of the uterine mucus.*
9. *Leptomitus of the eye.*
10. *Oidium albicans.* Robin. (Syn. Cryptogamia of diphtheritis and aphtha). Aphtophyte (Gruby).
11. *Fungus of the lung.* Bennett.
12. *Fungus in the discharge of glanders.—Brit. and For. Med.-Chirurgical Review, Oct.* 1853, *p.* 416.

112.—*On the Treatment of Pityriasis Capitis.*—[Mr. George Duplex, in a letter to the editor of the 'Lancet,' recommends the application, every night, of a little nitrate of mercury ointment softened with almond or olive oil. A few doses of alkali with a slight bitter may be also of service. He says,]

Many years ago I was frequently much teazed by the apparent obstinacy of this affection; but since I have adopted the above formula, I have always succeeded in relieving my patient in a short time. I also use occasionally a lotion of the nitrate of mercury dissolved in distilled water, (much weaker in strength than the ointment,) in cases where the trunk has been almost covered with the eruption; it need only be applied every second or third day with a sponge. I need scarcely observe that this disease is generally liable to return; but if the above remedies be immediately resorted to on its re-appearance, scarcely more than the application will be necessary for its removal.

[Mr. M. J. Connor, another correspondent, observes with regard to the peculiar obstinacy of a case under his care,]

After repeated applications of my own prescribing, and after having had recourse to old prescriptions, I almost gave up the case in despair, when it occurred to me to try cold water, and advised that the head should be washed in cold water every morning, at the same time recommending a mixture, with one drachm of sesquicarbonate of soda dissolved in six ounces of any bitter infusion; two tablespoonfuls to be taken three times a day. In a very short time the improvement was wonderful, and in about three weeks or a month the scalp was perfectly free from disease, and has continued so ever since.

I am now perfectly satisfied, after the experience I have had in this very troublesome disease, that all stimulating applications, oils, and oleaginous compounds should be avoided, as they only tend to aggravate the disease.—*Lancet, Oct.* 1, 1863, *p.* 330.

113.—*On the Treatment of Psoriasis.* By Dr. Robert Crawford, Peebles.—[Dr. J. A. Easton, of the Glasgow Royal Infirmary, treated cases of lepra and psoriasis by acetate of potass. The following case is a proof of the value of the same treatment in the hands of Dr. Crawford. The patient was a female aged 53, who had carried on business as a small grocer, which caused her to be much upon her feet. Œdema of the ankles gradually came on, and the legs became red and scaly. The disease progressed until at length it terminated in one of severe psoriasis. The treatment was as follows:]

Nourishing diet. ℞. Acet. potass. ʒij., aquæ ℥iij., solve. sig. A teaspoonful in a little water three times a day. Locally, the limbs to be put for five minutes, night and morning, into a tepid bath containing bicarb. sodæ ʒj. The scales to be gently brushed off with a soft flesh brush, and then the following to be applied:—℞. Plumb. diacetat. solut. ℥j. ʒvj., sol. mur. morph. ʒij. sig. A teaspoonful to be mixed with a tablespoonful of cream and applied to the limbs. The disease

now began speedily to disappear. The pain and itching abated, and sleep returned. The amount of urine greatly increased, the sp. gr. at the same time rising, showing a greatly increased relative quantity of the solid ingredients. On the 21st June, the skin had regained its healthy appearance, and she was able to walk with the help of a staff.—*Monthly Journal of Med. Science, Oct.* 1853, *p.* 281.

114.—*Lotions and Medicated Poultices in Phlegmonous and Erysipelatous Inflammations, and especially in Paronychia.* By Dr. Fred. James Brown, Chatham.—[In all these cases Dr. Brown urgently recommends the employment of astringent and sedative lotions, and poultices made with these instead of water, for not only, he says, may the disease by these means be sometimes checked before suppuration takes place, but when matter is formed the inflammation is not so great and the parts are much sooner healed. He says]

The astringents that I employ are the sulphate of zinc and burnt alum mixed with acetate of lead. This is an unchemical mixture, but its use is satisfactory. I am indebted to my father, an old staff surgeon, for the prescription, which is, for each ounce of water three grains of burnt alum, two grains of zinc, and two grains of lead. The lotion should be used warm. It is advisable to omit the lead after the disease has been subdued, for fear of its effects on the muscular system, although I have never seen ill effects from perseverance in its application for many weeks. These ingredients placed in paper as a powder, in sufficient quantity for a wine-bottleful of water, enable a patient to use the lotion both freely and cheaply.

I have no doubt but that many surgeons use lotions for the affections mentioned, and I must therefore apologise for bringing forward this mode of treatment; but I have seen so many fingers crippled by the persistence of inflammation under the water-poultice treatment that I consider the subject worthy of attention. Surgeons can see the improvement that occurs in many diseases of the eye, ear, and throat, from the use of astringent lotions, yet they commonly neglect such applications in phlegmonous inflammation occurring in the trunk and limbs.

Nitrate of silver is sometimes applied over surfaces affected by erysipelatous inflammation, but I am not aware that astringent lotions are usually applied by means of cloths laid upon the parts. I recollect reading in one of the periodicals of sulphate of iron lotion for erysipelas, and I have employed it with advantage.

I presume that the astringents diminish the calibre of the blood-vessels, and effect some change upon the nutrition process by which the profuse formation of cells is restricted. Certain it is that the inflamed part becomes diminished in size and whitened: and suppurating parts yield secretion in greatly diminished quantity, (without becoming hot and dry, as might be anticipated,) whilst their bulk is reduced.

The internal treatment that exerts most influence on paronychial inflammation is sulphate of quina in Epsom salts mixture, preceded (in

severe cases) by a few doses of tartrate of antimony in Epsom salts mixture. The same internal treatment is peculiarly efficacious in erysipelas and phlebitis, and in the unhealthy inflammations generally, as they are termed.

In concluding these few remarks, I would mention that the ancient lapis divinus (alum, nitre, and sulphate of copper) constitutes a gargle that will quickly remove inflammation of the throat; and the same (with the omission of the nitre) forms a lotion under the use of which sores on the penis heal with rapidity.

The medication of poultices by means of ointments is advantageous in certain cases. Resinous ointment mixed with a poultice considerably hastens the suppuration and cure of a boil, and it will cause the skin to yield much sooner in abscesses of the breast and neck than occurs under simple poulticing. Red oxide of mercury ointment mixed with a poultice cleanses foul sores and expedites their healing. Medicated fomentations and poultices were in great esteem formerly, but they have fallen into a neglect, which I consider to be unmerited.—*Lancet, May* 28, 1853, *p.* 493.

115.—TREATMENT OF SIMPLE ERYSIPELAS AS A LOCAL ACUTE DISEASE.

By John Higginbottom, Esq., F.R.S.

[In a paper read before the Midland Counties' Branch of the Provincial Medical and Surgical Association at Nottingham, Mr. Higginbottom observes,]

I wish to bring before my professional brethren the following questions:—

1. Is simple acute erysipelas a purely local, or a constitutional disease?
2. Is it sometimes a local, and sometimes a constitutional disease? or,
3. Is it simultaneously both, a local and a constitutional disease?

I am of opinion that it is in all cases purely local; and that the constitutional symptoms are a result of the local disturbance. This opinion I have formed from the following facts.

1. I have had a number of cases of erysipelas on the face and elsewhere, where there have been no constitutional symptoms; in these the disease has been directly arrested and subdued by the application of the nitrate of silver. Now, it is my opinion that, if the erysipelas had been allowed to proceed without the local application, severe constitutional disturbance would have been the result.

2. If from exposure to wet or cold, &c. a feverish attack should come on, and in several days erysipelatous inflammation should supervene; on a prompt application of the nitrate of silver, along with the use of common remedies for the cold, the patient becomes convalescent in a few says: but if the local application is neglected, the inflammation runs its usual course, the constitutional symptoms become more aggravated, and the illness is much prolonged.

3. If the erysipelas and constitutional symptoms are simultaneous, a

prompt application of the nitrate of silver, and the use of active constitutional remedies, cut short the disease; and the patient is convalescent in a few days. But if the local application is neglected, the disease runs its usual and often destructive course, setting at defiance the most active constitutional treatment.

In my 'Further Observations on the Nitrate of Silver,' p. 31, is related the following case, which will illustrate what I have advanced.

Case 1.—Mrs. S., some years since, had a severe attack of erysipelas of the face and head, which ran its course under the old medical treatment; the effects of the disease were so severe as to confine her to her bed-room for six weeks.

In November, 1845, she had another attack of erysipelas, which had progressed twenty-four hours before I saw her. A decided application of the nitrate of silver was made to the parts affected, and purgatives were given. She was convalescent in seven days.

The following year, in October, erysipelas again made its appearance on the face. She had taken a purgative before I saw her. One decided application of the nitrate of silver was sufficient, and she was not confined to her house a single day. No further remedies were required.

Mr. Nunneley, of Leeds, in his monograph on Erysipelas, says (contrary to his own opinion), that Dr. Smyth, Mr. Earl, Mr. Arnott, Mr. James, and Mr. Lawrence, consider that "erysipelas is essentially a *specific disease,* affecting one tissue alone, characterized by the local disorder, which forms the chief symptom and upon which the constitutional disturbance depends."

From the commencement of my treatment of erysipelas with the nitrate of silver, I have considered it a local specific disease; and this view appears to be supported by the speedy subsidence of the fever, as soon as the local disease has been subdued by the application of the nitrate of silver.

Erysipelas may be considered as the result of a poison, *sui generis.* It remains at first like a small patch on one side of the nose, cheek, or elsewhere, and makes often no progress for twelve or twenty-four hours, continuing so long as to generate its own poison, which is then carried into the system; and at this period, the constitutional symptoms commence.

The following are my reasons for believing that erysipelas is a local disease; which I wish to repeat.

1. If erysipelas makes its appearance on the face without constitutional disturbance, the prompt application of the nitrate of silver alone is sufficient to arrest and subdue the disease.

2. If fever and constitutional symptoms come on before the appearance of erysipelas, the simultaneous use of the nitrate of silver and constitutional remedies cut short the disease, and the patient is convalescent in three or four days. But, if constitutional remedies alone are used, and the nitrate of silver neglected, the disease will commonly run its usual course.

3. If the erysipelas and constitutional disturbance come on simultaneously, the prompt use of both the nitrate of silver and the constitutional remedies arrest and subdue the disease. If the nitrate of silver is omitted, the disease will run its usual course.

4. Whether the disease be idiopathic or traumatic, the erysipelas has the same characteristics. The inflammation spreads and produces the same dire effects; first, on the skin; second on the cellular tissue; third, on the mucous and serous membranes. Both the idiopathic and the traumatic erysipelas are cured by the same means.

Of course, the disease is often mild or aggravated, according to the healthy or unhealthy state of the patient, whether temperate or intemperate. I have always found consumers of alcoholic drinks most difficult to cure, in erysipelas as well as in all other diseases; and if they were banished altogether from medical practice, acute disease would be sooner cured, and chronic disease would be more manageable.

I do not believe in the occurrence of metastasis in erysipelas. That distant parts are affected in erysipelas is true: but this appears to me to be caused by the extension of the disease, and by the specific poison of the erysipelas carried into the system.

I would make an observation here which I have often insisted upon; viz., that in all cases a strong solution of nitrate of silver should be used—*one scruple of the nitrate to one drachm of distilled water.* I not only used this strong solution, but also rub the stick of the nitrate of silver on any particular part where I wish it to be well applied. I have attributed the failure of this excellent remedy in the hands of some surgeons to the use of a weak solution; and this I have named, with other causes of failure, in my 'Additional Observations,' p. 19. In an excellent paper, by Dr. W. S. Oke, published in the 'Association Med. Journal' for January 21st, 1853, p. 53, 'On Erysipelas, &c.' he mentions a surgeon who has used the nitrate of silver successfully, with a solution of one scruple of the nitrate of silver, six drops of the nitric acid, and *one ounce* of water. I am sure such a weak solution cannot be depended upon. I never knew a very free application of the strong solution, or the stick of nitrate of silver, "produce the destruction of the cutis vera," or be attended with any ill consequences.

Dr. Oke says, "the Royal South Hants Infirmary, in common with other hospitals, has occasionally been invaded by erysipelas with an average result; but since the nitrate of silver has been employed, the unfavourable terminations have been comparatively very few; and I am persuaded, that were this excellent remedy more frequently adopted, erysipelatous inflammation might be generally controlled."

From a late epidemic of erysipelas in Nottingham, I have selected six cases; four where the nitrate of silver was applied, and two where it was omitted; the results of which were in accordance with my experience for the last twenty years.

Case 2.—Mr. M., a railway clerk, aged 26, had erysipelas on the left side of his face, not reaching the scalp. He was slightly indisposed. One decided application of the nitrate of silver was alone required. He took an ipecacuanha emetic, followed by a calomel pill and purgative draught, and a saline mixture. He only required visiting four days.

Case 3.—Mr. F., a farmer, about 50, a free liver, called at my house to consult me, having an erysipelatous inflammation of the face upon the right ear. It was spreading near the scalp. He was so little indisposed, as to be able to ride five miles on horseback to visit me. I

applied directly, and very freely, the nitrate of silver to the inflamed part close to the scalp, and on and beyond the inflamed ear, fearing much that the scalp would become affected. I thought proper to prescribe for him an emetic of ipecacuanha, a calomel and colocynth pill at bed-time, and the following morning an active purgative mixture. He returned home on horseback, and I heard nothing more of him for a week, when he sent for a repetition of the purgative mixture, with a message that the inflammation was quite gone.

Cases 4, 5.—In October 1852, two sisters, between 20 and 30 years of age, living together in the same house, had erysipelas. The eldest had been indisposed for several days before I saw her, and the disease was attended with much constitutional disturbance—the erysipelas having partially affected the scalp. I thought it necessary to have the whole head shaved (although it caused considerable pain) so that I might apply the solution of the nitrate of silver freely to the whole scalp. The usual constitutional remedies were used. In this case the recovery was more tardy on account of the application of the nitrate of silver having been so long delayed. A troublesome inflammation of the eyes was produced in this case, by the neglect of applying the nitrate of silver on the inflamed eyelids, which should always be attended to, in order to prevent inflammation of the conjunctiva.

The younger sister, disliking the application of the nitrate of silver, was desirous of taking an emetic and purgatives, to check the inflammation; but finding the erysipelas to come near the scalp, she submitted to a very free application of the nitrate of silver, which extinguished the inflammation, and she was glad that her hair was preserved.

In the two following cases, the nitrate of silver was not applied.

Case 6.—Mr. G., aged 54, of a gross habit, a habitual consumer of alcoholic drinks, and a smoker of tobacco (but not an intemperate man), had in October a catarrh, and felt generally indisposed. There was a slight blush of erysipelas on the left side of the face, but not sufficient to excite any particular attention. Remedies were employed for his catarrh, but no local application was used to the erysipelas. The inflammation progressed over the scalp, and produced cerebral disturbance, which, however was not severe; the throat and the mucous membrane of the larynx became inflamed; the irritation and cough increased; the constitutional symptoms were now very severe; the mucous membranes generally were affected; the joints were affected with severe pain and inflammation (similar to rheumatism), and the secretions were diminished in quantity, and in a vitiated state. A general bad state of body was induced, and after suffering a number of weeks, he died.

In this case all the severe symptoms followed the increase of the erysipelatous inflammation, and I think would have been prevented by a prompt and early application of the nitrate of silver.

Case 7.—In November, Miss J., aged 35, was attacked with a slight erysipelas on the left side of the cheek and nose. No external application was used. An emetic, active purgative, saline draughts, and repeated doses of calomel and James's powder were given. The erysipelas progressed over the scalp, down to the neck, and a little on the chest. A continued and severe indisposition was the consequence, attended with

cerebral disturbance, producing delirium for several days; for which blisters were applied to the nape of the neck. Several large abscesses formed in the neck and chest; the last of which was opened in eight weeks from the commencement of the erysipelas.

The above two cases were all I had attended for some years, where the nitrate of silver was not applied. Both were mild in the commencement. The result showed the necessity of a prompt and decided application of the nitrate of silver, even in the slightest attacks of erysipelas, to prevent future evil consequences. In the last case, all the severe illness would have been prevented by a timely application of the nitrate of silver. I do not say it *might* have been prevented, for the continued experience of twenty years or more has assured me of the practical truth, that it *would* have been prevented. I have had no case where abscesses have formed when the nitrate of silver has been early and well applied in erysipelas.

I have found that a very decided application of the nitrate of silver in phlegmonous erysipelas has the extraordinary power of preventing the destruction of the subcutaneous cellular tissue, by preserving the integrity of the cutis vera, and subduing the cuticular inflammation. Even in a patient, where the limb has been as large again as the other, in which it could be scarcely expected to be benefited, the application has so far modified the inflammation as to render it a case of simple phlegmonous abscess, which has been relieved by a free opening with the lancet, and where there has been no loss of cellular tissue.

Case 8.—Mrs. B., aged 68, living in a low part of the town (Narrow Marsh), had phlegmonous erysipelas of the whole of the right leg, extending a little above the knee on the thigh; the leg was as large again as the natural size, and was very tense and painful; there were some vesications on the fore part of the leg; the patient had been neglected, till the state of the limb alarmed her friends. I directed an emetic, purgative, and saline mixture, and applied the strong solution of the nitrate of silver very freely on the whole of the leg, and on and above the inflamed part of the thigh. The following day, the nitrate of silver had had the desired effect of allaying all irritation and inflammation, in which state it remained for four days; on the second and third day, a considerable degree of vesication had taken place, from the free application of the nitrate of silver; but I found the limb did not at all diminish in size; on that account, I knew from former cases, that suppuration had taken place. On the sixth day, I made a free opening about two inches in length at the most depending part, about the middle of the limb; a large quantity of pus was evacuated, but there was not the least appearance of any sloughing of the cellular substance. In a few days afterwards, I made a small opening above the outer ankle, from which some sero-purulent matter was evacuated; and in a few days on the opposite side of the limb, from which issued only a little serous fluid. The limb quite recovered. No further application was required, beyond the black lint and nitrate of silver to the sores, and a common linseed poultice constantly applied, repeated every eight hours. I never knew a limb in the same state, under the common mode of treatment, which terminated so favourably.—*Association Med. Journal, April* 1, 1853, *p.* 276.

116.—THE LOCAL TREATMENT OF CARBUNCLE AND FURUNCLE.

By Richard Flint, Esq., Consulting Surgeon to the Stockport Infirmary.

[Mr Flint has followed the method of treating the above diseases now advocated more than twenty years, and thinks the remedies may be almost termed "specifics." He says,]

Considering these morbid actions as manifesting want of power in the vascular system of the parts affected, I sought for an application that would, if possible, assist or increase it, and at the same time not interfere with the natural excretions from the skin. This I thought I saw in the common lead or litharge plaster, spread on the white leather of the shops. The former, if correctly prepared, will answer fully the object intended; and the latter ought to be well dressed, having no hard or harsh parts in what is selected for use. There is in lead plaster, besides its unirritating quality, a valuable property, which seems to have been often overlooked or forgotten—that of promoting or inducing perspiratory exhalation from the skin. Every surgeon must occasionally have noticed that, where the common lead fascia (containing no resin) has been allowed to remain on any part of the trunk or limbs for weeks, when it is removed there will be seen a considerable quantity of perspiratory fluid which has been pent up, showing no other consequences than a little soddening of the skin upon which it has been so long confined. For this reason, I always prefer using the plaster without any admixture or combination; and, if fresh, it has every requisite adhesive property. To this peculiar effect on the cutaneous exhalants, I attribute much of its beneficial influence in the more acute boil or carbuncle. It must, however, be allowed, that in the extremely acute forms of this disease, the most soothing applications to the surface of the skin are indispensable, and that fomentations and poultices, for twenty-four hours or longer, may be quite necessary. But I would say that as soon as the plaster can be borne, it ought to be applied without delay. It is likewise to be remembered that there are idiosyncrasies where a plaster, entirely unirritating under ordinary circumstances, cannot be indured, from the cutaneous irritation and excitement which follow its use. This, of course, is to be regarded as an exception to a rule.

The mode of application is the following. After spreading the plaster in the ordinary manner, it is to be cut in dimensions according to the size of the carbuncle or boil to be dressed; carefully observing that it is large enough to include from half-an-inch to two or three inches of the surface around the tumour. Where this is large and deep, as in a carbuncle from four to six or eight inches in diameter, the circumference to be embraced should be proportionately large; and the leather, in such a case, should be chosen soft and strong, in order to obtain an amount of adhesive mechanical support to the surrounding and subjacent parts, so as to enable them to originate and establish a new action. It must be well remembered that it is not enough, in any of these dressings, to cut the plaster the exact size only of the tumour. It is expected that some of the surrounding surface should be taken in also.

In twenty-four hours after dressing, favourable change in the appearance of the parts is generally discernible; and—what will be allowed to be a highly important result, in those cases where the local irritation is fast inducing a state of cerebro-spinal distress and lesion, likely soon to end in coma and death—it will often, in a less period of time, afford a mitigation of suffering which comes upon the patient like a charm, and restores him the rest and sleep to which he had long been a stranger. If the tumour be prominent or pointing in any part, a crucial incision is to be cut in the plaster, and placed directly over it, that the discharge may have free egress; and should there be at first no suppuration, this mode of dressing quickly promotes it, and assists the living parts to detach and throw off, at the least possible loss, the sloughy cellular membrane. If the tumour is not disposed to slough or suppurate, the application decidedly hastens the resolution or absorption of the effused matter.

In a boil the dressing is precisely the same as in a carbuncle; taking care that the plaster has sufficient hold of the tissues around—perhaps from half-an-inch to an inch. In a few hours, the acute pain and suffering of the patient, which had unceasingly disturbed his rest and comfort, become greatly mitigated, and soon afterwards wholly removed; and the improvement in the condition of the parts is strikingly apparent on every renewal of the plaster. The little trouble and inconvenience of this method, both to patient and surgeon, strongly contrast with the inconvenience, wearisome labour, and attention required by the old plan; and whilst the latter necessarily confines the patient, even in minor cases, to the house, in bed, or on a couch, the former will often be little or no restraint on his usual avocations.

It is requisite that the plaster be changed more or less frequently, according to the extent of discharge or slough; but the longer the interval, the more desirable, as the less the parts are disturbed the better. If there be much discharge or slough, soiling the cut edges of the plaster, it may be changed once a day; if there be little, every third or fourth day will be sufficient; but the linen pledgets and bandage adjusted over the plaster, and absorbing the discharge as it exudes, may be replaced frequently. In general, no other dressing is required to the end of the treatment. The plaster must be reduced in its dimensions as the tumour lessens in size, whether it be by suppuration, slough, or absorption. In some instances, towards the close, simple or calamine cerate may be desirable. The solution of the nitrate of silver, of the strength of ʒi. to ℥i., will also be found of great value as a cicatriser; for I concur with my friend Mr. Higginbottom that, besides other valuable properties, which he has so ably advocated, there is no agent in the surgery so useful for promoting healthy cicatrization or removing excoriations as lunar caustic. It likewise excels all other means in giving increased vigour and strength to a new cicatrix.

From what I have seen of this method of treatment in a number of patients during the last several years, and from the speedy relief or total removal of pain and distress in the worst cases, and in bad temperaments, I have looked upon it as of great value, if attentively carried out; for I am persuaded that it will render recourse either to the knife, to caustic

remedies, or any of the other more severe measures of our art, unnecessary. Should, however, the choice of the surgeon and patient lead them to the latter alternative I would strongly enforce that, whether it be the knife, or the caustic, it be always used at an earlier stage of the disease than is yet commonly practised, as this, like the early free incision in diffusive inflammation of the cellular membrane, will prevent the destructive ravages of tissue, as well as the fatal constitutional symptoms which follow the unchecked and protracted course of the disease.—*Association Med. Journal, July* 15, 1853, *p.* 606.

117.—ON THE TREATMENT OF INDOLENT ULCERS BY INCISIONS.

By John Gay, Esq., Surgeon to the Royal Free Hospital.

[In the employment of his bandage, Mr. Baynton considered its chief value to be from the pressure which the ulcer received from it, and especially as tending to bring the edges of the ulcer closer together. Mr. Critchett, in his work on ulcers, condemns this view, believing the value to arise from the support given to the circulation in the veins, especially if they happen to be diseased.]

Mr. Baynton's plan of bandaging, with the view of bringing the edges of the ulcer closer together, and Mr. Critchett's, for the purpose of giving support to the limb, have equally been successful, and have as often failed. The anomaly therefore remains, from which the following question arises: Why does bandaging fail of curing an ulcer when *à priori* there was every reason to expect that it would have induced its cicatrization? The author believes that it arises entirely from a non-recognition of the principles upon which all ulcers must be treated in order to ensure their cicatrization, and of the real part the bandage must take whilst carrying these principles into practice; and he observes that the end which the surgeon should have in view should be to give freedom to the edges of an ulcer that they might be enabled to contract, as well as freedom to the adjoining tissues that these might yield to the traction thus made upon them. It is now plain how pressure can promote the healing of certain sores; but that it can only do so mediately, and this by removing any condition of the edge and adjoining parts that might be unfavourable to that process. It cannot, however, as is supposed, promote the immediate act of cicatrization; but, on the other hand, (if it has any influence at all on the process,) retards it by the restraint which it is calculated to place upon the movements of the skin. The bandage, however, can be applied so as directly to favour the act of cicatrization; but this it can only do when used as Baynton applied it—i.e., in such a manner that it shall "bring the edges of the ulcer nearer together." The author related the case of a lady who had a small varicose ulcer over the inner malleolus, surrounded by a broad patch of eczematous skin. He tied the veins, placing a ligature on one close to the edge of the sore, within the area of the diseased skin. The ulcer healed, and with it all the wounds made by the ligatures, except that near the

cicatrix of the ulcer, which remained open, having the same indisposition to heal as that manifested by the original sore. Another ligature was applied to a vein observed to be running towards this sore close to its edge. The same results followed; the ulcer healed, but the sore made by the ligature gaped and became an indolent and apparently an incurable ulcer, for it resisted every effort to induce it to heal. After a few weeks the whole leg was attacked with erysipelas, and vesication ensued over the diseased portion of skin. On the subsidence of the inflammation the skin assumed its former healthy condition, and the ulcer immediately healed. The author thinks it clear that the obstacles to the entire and permanent healing of these indolent ulcers are to be found directly in the condition either of their edges or of the adjoining tissues, or in that of both conjointly—i. e., the edge of the ulcer is not free to contract, or the adjoining textures are not free to yield to the traction that the edge, in closing in, makes upon them. The treatment he proposes will be gathered from the recital of the two following cases:—

Case 1.—E. F., aged 36, a seafaring man, was admitted into the Royal Free Hospital for an extensive ulcer on the front and lower part of the leg, consequent on a blow received seventeen years since. He had been an inmate of many hospitals, and the sore had on as many occasions readily yielded to rest and treatment up to a certain point; but after diminishing to the size of a shilling, or rather larger, the process of healing became invariably checked, and no means could bring about complete cicatrization. On resuming his usual occupation, the ulcer invariably began to spread; and in despair of obtaining a cure, the poor man requested that his limb might be amputated. Instead of acceding to his request, Mr. Gay had him placed in bed, and the ulcer treated with water dressings. It began to granulate, and to close in, but after a while this process again suddenly ceased, and in despite of strapping, bandages, and topical application of all kinds, refused to proceed any further. On careful examination, Mr. Gay observed, that at the part where the ulcer was situated, the leg was less in size for a space corresponding to little more than the longest diameter of the cicatrix; as though, in that particular part, it had been surrounded by a tight bandage. The skin itself immediately around the sore, instead of being elastic, and free to glide over the subjacent tissues, was tense and immovable, although, in other respects, apparently healthy; and any attempt to draw the edges of the sore nearer together was thereby rendered futile. Mr. Gay, therefore, made an incision through the healthy skin and superficial fascia of the length of the whole cicatrix, within a short distance of the edge of the sore, and in a direction parallel to the long axis of the limb, and, therefore, at right angles with the line of principal tension. The wound first gaped a little; the ulcer, however, began immediately to close. On the third day the wound gaped still more: and it was interesting to observe that the edge against the ulcer followed exactly the outline of its edge as the latter varied in the course of healing, manifestly the result of the traction made by the edge of the ulcer upon that of the wound. After the fourth day, by which time the sore had almost closed up, the process of healing was less rapid; but

within twelve days cicatrization was complete: and in another twelve days that of the supplemental sore was likewise accomplished.

Case 2.—A. B., aged 29, a domestic servant, had a sore on the inner malleolus, of the size of half-a-crown. It had existed for twelve years, and was supposed to be due to large varicose veins, which were to be seen running down the leg towards the ulcer. On three separate occasions Mr. Gay tied the veins, and the operation, with rest, appeared to be successful. The ulcer, however, re-opened on each occasion shortly after her return to her work. On examination, it was observed to be shallow, and disposed to heal, whilst its edges were hard, and immediately fixed to the subjacent tissues. Towards the heel the adjoining skin was a little thickened, of a purplish colour, and also fixed; but in the opposite direction, immediately beyond the edge of the ulcer, it was perfectly healthy, and very loose.

It will now be obvious that in some important respects this case differed from the foregoing; for whereas in this the edges of the sore were free, but the adjoining skin fixed, in the one under consideration the edges were fixed, but the adjoining skin on one side was free. This ulcer was therefore treated in the following manner:—After excising it entirely by means of incisions close to its edge, Mr. Gay made two other incisions parallel to the edges of the new sore, and about an inch from them through the adjoining skin. The portion of sound skin towards the surface of the foot, included between the sore and the front incision, was then dissected from its adjacent connections, shifted over on the site of the ulcer, and its edge united to that with which it was now brought into contact my means of hare-lip needles. The incision towards the heel was left for the same purpose as that for which the analogous incision in the former case was made—viz., to relieve tension. By the fourth day the transplanted flap had united to the base of the sore, and, with the exception of a very trifling slough of a portion of the opposite edge around the needle, all was going on perfectly well. This case is given so far as an illustration of the practice which Mr. Gay thought proper to adopt in accordance with the principles advocated in the foregoing remarks. A severe attack of typhus fever overtook this patient, and with its accession the reparative processes, which had been going on most satisfactorily, were interrupted for a time. These, however, have since been satisfactorily renewed, and the flap of healthy skin which supplied that lost by ulceration is becoming reunited to the base of the sore, and will yet take an important part in the future stability of the cicatrix. The plan of treatment which Mr. Gay suggests for ulcers which he says appear to defy all other methods is now obvious. It is, to relieve the tension of the adjoining skin or other tissues, where that is opposed to the healing of a sore, by incisions at right angles with the apparent line of tension, as in the first case; or by a species of plastic operation to supply new skin altogether, where the obstacle to its formation lies in an irremediably fixed condition of the edge of the sore itself, as in the second.—*Lancet, June* 18, 1853, *p.* 568.

[In a letter to the editor of the 'Medical Times and Gazette,' Mr. H. T. Chapman, after commenting upon the above operation, proposes the fol-

lowing modification, which he considers to be simpler in its performance, and obviating the danger of producing one or more ulcers by the incisions practised by Mr. Gay.]

The plan referred to consists in simply raising the adherent skin from its connexion with the parts beneath, by gliding a double-edged bistoury under the tense margins of the sore, so as to set them free to a sufficient extent to admit of their edges being brought nearly, if not quite, into contact, across the suppurating surface, my intention being afterwards to maintain them in that position by short straps of adhesive plaster, until union had taken place. A further division of the raised margins, at right angles to the sore, may sometimes be requisite for their better adjustment.

Its feasibility not having, then, been tested, I did not think it worth while to allude to what was no more than a project in the second edition of my Essay on Ulcers, published in the early part of the present year; but spoke of it to a number of friends attached to hospitals, in the hope that some of them might be induced to give it a trial. This has been done recently, under the influence of chloroform, by Mr. Ure, at St. Mary's Hospital, although my views were not entirely carried out,—the after-treatment consisting merely of water dressing and rest, no effort having been made to draw together the liberated margins with adhesive plaster. The latter stage of the cure was accordingly completed by granulation, and occupied more time, I imagine, (about a month,) than if the straps had been employed. Its success, nevertheless, has been sufficiently marked to encourage its repetition in other cases, a notice of which will, in all probability, ere long appear.

One word of caution in conclusion. A tendency will always, perhaps, prevail to adopt and practise these and similar novelties without due discrimination. I have already been asked my opinion as to the propriety of an operation in two instances where no shadow of a necessity existed for any measure of the kind. The margins of neither ulcer were more than ordinarily adherent to the parts beneath, nor could I discover the least tension of the surrounding skin. Both sores, in fact, afterwards healed under long-established methods of treatment.

The cases are extremely few in which an operation is indispensable; and still fewer, I suspect, are the private patients who will submit to the treatment of an ulcer on the leg by the scalpel, even when all other attempts have failed.—*Medical Times and Gazette, Aug.* 13, 1853, *p.* 176.

118.—ON THE TREATMENT OF ULCERS BY GALVANISM.

By T. Spencer Wells, Esq., H.M.S. *Modeste.*

[Having had repeated opportunities of witnessing the effects of a single current on ulcers and granulating surfaces, Mr. Wells thus records the main point of his experience. He says:]

The apparatus I have used has been of two kinds. The first is a single pair of plates,—namely, an oval plate of zinc from one to three inches in the long diameter, and a plate of pure silver of the same size and form, the two being connected by a silver wire soldered to the back

of each plate. The second I have only used for about a year. It is Pulvermacher's electric chain, which I have used with six and eighteen elements. I shall first state the result of my experience with a single pair of plates, subsequently remarking upon the comparative influence of Pulvermacher's chain.

1. To secure the effects of the apparatus, it is necessary that the surfaces of the two metallic plates be perfectly smooth and clean, and that they should be applied to the body without intervention of any substance whatever. At first I believed that it was necessary to denude the cuticle; and accordingly, when I required to act upon an exposed surface, I applied one plate upon it, and made a small puncture in some neighbouring part, upon which the other plate was applied. I soon found that this was unnecessary, and that it was only necessary to moisten the cuticle to insure the passage of the current. When moistened by vinegar, or an acid solution, the effects were quite as rapid as after the denudation of cuticle.

2. If two slight excoriations, two ulcers or suppurating surfaces, upon a limb or any part of the body, be acted upon by a pair of plates, the zinc being applied upon one, the silver on the other, the surface beneath the silver rapidly cicatrizes, while that beneath the zinc is in two day converted into a superficial eschar. If the plates be still kept applied, the eschar extends to the subcutaneous cellular tissue, and presents all the characters of a slough produced by caustic potash, except that the dead tissues are a little less compact. After the separation of these sloughs, cicatrization under ordinary applications is very tardy, but is much hastened by the application of the silver plate, the zinc being fixed on some neighbouring part. So long as the zinc plate remains upon an exposed surface, a copious exudation of fetid serum goes on from it, and a dark, soft, spongy slough is produced, which does not clear away for two or three days after the zinc is removed. After the separation of the slough, an excavation is left, and the granulations are healthy. They reach the surface level much more quickly when the silver plate of the apparatus is employed, than under any other treatment. That this good effect is not due to mere pressure of the metallic plate I have become convinced, after comparative trials of the application of the silver, with and without connexion with zinc. I have made numerous trials of the methods of Baynton and Scott, of water and dry dressings, of elastic bandages, and various other accepted modes of treating ulcers, and have found no means so capable of uniformly producing a rapid growth of healthy granulation as galvanism.

3. I have often been astonished at the change effected in twenty-four hours in the condition of ulcers. At one dressing they are seen to be deep cup-like excavations. At the next the granulations have nearly reached the surface. On the third day the surface level of the skin and granulations of the skin is often uniform, the well-known marginal blue rim announcing the commencement of cicatrization. When this point is attained, it is better not to apply the apparatus again, but to employ simple water-dressings, or, if there be any tendency to flabbiness in the granulations, dry lint, and a strap of adhesive plaster. When I was assistant-surgeon in H.M.S. *Hibernia*, a form of contagious circular

sloughing ulcer was very prevalent. We used to destroy the diseased surface by undiluted nitric acid, and apply the galvanic apparatus as soon as the slough separated. The men were often allowed to walk about, and suffered no more impediment from the apparatus than from a simple bandage. Much trouble was spared in dressing, as the apparatus was only removed once in twenty-four hours. In that very obstinate form of ulcer naval surgeons are so frequently called upon to treat, called by the men "a burn with a rope," in which coils of rope, twisted round a limb, destroy a ring of integument, fascia, and perhaps muscle, the slowness of the natural process of repair under any variety of ordinary treatment is quite peculiar. I treated a case of this kind when surgeon of H.M.S. *Trafalgar*. The integuments, fascia, with some portions of muscle were destroyed all round the calf of the leg; the tibia and fibula being laid bare. The slough separated, and an annular ulcer remained nearly two inches in breadth. The man was a long time on the sick list before I applied the galvanic apparatus. Scarcely any signs of a reparative process had appeared when I applied the silver plate of the apparatus to a portion of the ring; and it was quite extraordinary to trace the daily effects as the plate was moved around the large ulcerated surface; the spots where the silver had been applied for only twenty-four hours being far above the level of other parts, and consisting of small conical granulations, in place of the flat, flabby surface which had formerly existed. Cicatrization afterwards took place as readily as in ordinary cases.

4. When the zinc plate is applied upon the superior portion of a very large ulcer this portion alone improves in appearance, while the inferior portion degenerates; but if the plate be applied upon the lower portion only, the whole surface of the ulcer improves equally.

5. In cases where several ulcers exist upon a limb, and the zinc is applied to a superior, the silver to an inferior one, all the ulcers situated in a direct line between the two plates improve in appearance, become healthy sores, and cicatrize, while those on either side of the current remain unaltered, and sometimes degenerate.

6. When the silver plate is applied upon the extremity of a fistulous sore the effect does not extend beyond the edges; but if a projecting portion of the silver be carried to the bottom of the fistula, granulation rapidly follows. It is very easy to perforate the silver plate by a screw, the point of which is smooth, and adapted in size and shape to that of the fistula. I found this plan answer admirably in a case of perineal fistula, which persisted long after perfect dilatation of a stricture of the membranous portion of the urethra. In cases of open bubo, with burrowing sinuses, I have introduced a small silver chain to the bottom of the cavity, and connected it, either with the plate of the single pair or with the copper end of Pulvermacher's chain. The result has been invariably satisfactory. I saw a case in H.M.S. *Scourge*, of a man who had been eight months on the sick-list from a bubo in this state; yet he was well after the chain had been used for one week only, in the manner I have described, by my friend Dr. Davidson, surgeon to the ship.

7. In several cases, normal innervation has been restored in paralysed parts under the use of this apparatus, the zinc being placed superiorly,

and the silver inferiorly, so as to include as nearly as possible the whole of the paralysed part. Disordered function of particular nerves has been also remedied, by so placing the two plates that the nerve lies between them.

8. Whether the single pair of plates, or Pulvermacher's hydro-electric chain, be used, a much better imitation of the natural currents of vital electricity is afforded than by the batteries in common use. The action of the latter is powerful, and only susceptible of temporary application, while that of the former is mild, uniform, and continuous, an electric current circulating continually in the same direction from one plate, or one end of the chain to the other, through any part of the body which is between the two poles. The single pair of plates never causes any pain or uneasiness to the patient, never producing more than slight itching or numbness, while in many cases where the action is very evident, no sensation whatever is felt. When Pulvermacher's chains are used, the sensations vary with the length of the chain, and the strength of the acid in which it is soaked before application. That I have most commonly used has been only eight links, and soaked in distilled vinegar. Itching or tingling sensations are felt for an hour or two, and are renewed as often as the chain is soaked in the vinegar, but nothing approaching to pain is complained of. With a chain of twenty-four links, soaked in the same acid, the tingling sensation is sometimes so acute, as to be troublesome, but still not painful. With regard to the relative advantages of the chains, or the single pair of plates, my present experience would lead me to prefer the plates in ordinary cases of ulcer, where they could be applied without producing painful or injurious pressure. I have found, that even where a chain of eight links was only moistened with water, the current has been too strong, and made an ulcer irritable. On the other hand the chains have great advantages over the plates when ulcers are situated over bones, or are too sensitive to bear metallic pressure. They are also to be preferred in cases of indolent ulcers in weak persons, as, in such cases, the current of the single pair of plates is too feeble to excite any very speedy influence.

I shall conclude this paper by some short notices of some cases in which the plates or chain have been applied during the year in this ship.

Case 1.—J. B., aged 18, grazed the right shin by a fall. Three superficial ulcers followed, and he was put on the list on the 15th of October. Water dressing was used until the 20th, but no change for the better took place. Pulvermacher's small chain, excited by vinegar, was applied on the 20th, kept constantly fixed, and only removed to be soaked again in the vinegar in the evening, On the following day, the ulcers were so nearly cicatrized, that it was not thought necessary to re-apply the chain. Water-dressing was used, and the sores again degenerated. On the 3rd of November, the chain was applied again near the sore, but, from the slipping of the upper end, in such a way that the current did not pass through it. On the following day, no change had taken place, but the chain was re-applied, so that the current should pass through the sore. On the 5th, it was very nearly healed. Chain kept applied. On the 6th cicatrization was perfect, and he was discharged to duty on the 7th.

Case 2.—C. H., aged 17, received a wound below the left external

malleolus, which was followed by an indolent ulcer. He was put on the list on October 15, and treated in various ways until the 26th without any benefit, when the single pair of plates was applied. On the evening of the 27th, no change having taken place, Pulvermacher's chain was applied. On the 28th half the ulcer was quite filled up and cicatrized, the other half nearly so. On the 29th, the chain having been constantly applied, cuticle had formed in the centre of the ulcer at the exact spot where the metal had been in contact. In order to determine if this were accidental. or owing to the galvanic current, the chain was discontinued, and simple dressing applied. The boy got his feet wet with salt water, and the sore again assumed an indolent, unhealthy appearance. On the 16th of November, the chain was applied, but wetted with water only. On the 17th not much effect had been produced, but the surface appeared more healthy. Continue. 18th.—Slight improvement. Wet the chain with acid. 19th.—Cicatrization nearly complete. Continue. 20th.—Cicatrix quite perfect. He returned to duty on the 22nd.

Case 3.—E. H., aged 27, applied on the 3rd of January, with an unhealthy sloughing ulcer on the foot, with inflamed edges. Poultices were first used, but no improvement followed. On the 5th, the single pair of plates were applied. 6th.—Sore cleaner. Continue. 7th.—Slough separated. Wet compress only used. 8th.—The wound had again degenerated, and continued to do so until the 10th, when the plates were again applied. On the 11th, the surface appeared healthy, but there was a deep, excavated, cup-like ulcer left, which did not appear to fill up. On the 14th, Pulvermacher's chain was applied. On the 15th, the sore was much contracted in circumference. Continue. On the 20th, the granulations being level with the surface, the chain was omitted, and water dressing used; cicatrization afterwards proceeding naturally.

Case 4.—G. W., aged 19, applied on the 9th November with an open bubo in the right groin, which he had concealed as long as possible. It had opened spontaneously. The edges were inflamed and undermined, the whole surface appearing very unhealthy, with a bloody sanious discharge. Black wash was first applied, then a lotion of diluted nitric acid, with solution of opium, but no improvement whatever had taken place up to the 14th. On that day Pulvermacher's chain was applied, the copper end being connected with a metallic plate which covered the whole exposed surface. It was kept constantly applied during that and the following day. On the 16th there was an appearance of commencing granulation, which, on the 17th, was much more distinct. The chain was still continued. The granulations had reached the surface by the 20th, when it became necessary to open a long narrow sinus, which extended downwards and inwards, and on the 23rd another, which extended outwards. Simple water-dressing was used until the 26th, but no healing process began. On that day the single pair of plates was applied. From this time granulation and cicatrization went on rapidly, the plates being kept constantly applied; but he was not sent to duty until the 20th of December, owing to an attack of diarrhœa.

Case 5.—Mr. D., aged 20, had suffered on the coast of Africa, with an obstinate ulcer on the leg over the middle third of the tibia, and, after

being four months on the sick-list of his ship, had been invalided. The ulcer healed in England, but left a large, thin, red cicatrix adherent to the surface of the bone. This gave way when he was in the *Vengeance* on this station, and he was again several months on the list before it healed. On any slight injury to the cicatrix, it broke down. He wore a padded metallic plate for protection, but he applied to me on the 30th of April, the old cicatrix being then completely converted into an ulcer three inches in length and two in breadth, with a livid soft surface, and fetid sanious discharge. Various simple and stimulating applications were used without effect. The single pair of plates was applied, but the pressure on the tender surface of the ulcer could not be borne. Pulvermacher's small chain was applied and produced a good effect, but so slight that the large one of twenty-four links was used. After this very rapid improvement took place, and he returned to duty after having been thirty-four days on the list, the ulcer, according to his own statement, having been in a worse condition than when he had been several months on the list on former occasions. He was again on the list in June, September, and November, with the same ulcer, which had been reproduced once by the kick of a horse, and the other twice by blows received on board. On each occasion, the inutility of ordinary applications was proved, and the great benefit derived from the long chain of Pulvermacher was most obvious. The average stay on the list on these three occasions was twenty-two days. The cicatrix is now much firmer, harder, and less adherent to the bone than when he joined this ship.

I might narrate many other cases, but the foregoing appear sufficient to illustrate the statements I made as to the therapeutical efficacy of galvanism in the treatment of ulcers.—*Med. Times and Gazette, July 23, 1853, p.* 84.

DISEASES OF THE EYE AND EAR.

119.—ON THE TREATMENT OF IRITIS.

By John France, Esq., F.R.S.

[The first part of the treatment manifestly should consist in preventing the effect of atmospheric vicissitudes upon the eye, and removing, if possible, any foreign body exciting or keeping up irritation. Next, we have to subdue the inflammation, and here, amongst the antiphlogistic measures, Mr. France makes venesection the exception and not the rule. When the inflammatory action is great, and there is good constitutional power, six to twelve ounces of blood may be removed from the temple by cupping. The effects of this proceeding should be first noted, and the necessity of a further abstraction decided upon.]

These measures having been premised, and the intestinal canal having been cleared by appropriate medicine, the next step is to administer mercury in doses proportioned to the severity of the case and the consti-

tutional vigour of the patient. In the syphilitic disease this medicine is, in fact, our sheet-anchor; and where the inflammation is acute, and the degree of power pretty good, calomel should be exhibited in one or two grain doses three times a day, and be persevered with steadily until the gums begin to show signs of the establishment of mercurial influence upon the system, or, which is tantamount to this, until the complaint begins to recede. In either event the dose should at once be moderated, as actual salivation is never called for. Indeed, in the great majority of cases, the effect becomes apparent upon the disease before either the gums, tongue, throat, breath, or salivary secretion betray any evidence of the action of the medicine. We have then no need to push mercury farther; no benefit accrues, but the reverse, from insisting upon the production of its physiological effects; its therapeutical effects (if I may be allowed the distinction) are what we require, and what we may very generally obtain quite independently of the other class. To check any purgative action of the calomel, which in syphilitic iritis is undesirable, I consider that the use of chalk mixture is preferable to combining opium with the pills, the latter drug having, it is well known, a tendency to cause contraction of the pupil, which in iritis of all kinds it is so great an object to prevent. In syphilitic cases of milder character, or occurring in subjects of impaired general powers, calomel must be given in smaller doses, and be less frequently repeated. The mercurial part of the treatment is in such instances similar to that which is habitually sufficient in simple and arthritic iritis. Here the exhibition of a grain of calomel, or five grains of mercury pill, or lead pill, night and morning, is commonly the full extent to which mercurials should be carried; and even this quantity should be diminished as soon as the subsidence of the disease permits. When iritis ensues upon an operation for extraction of cataract, mercury must be altogether withheld until the flap has securely adhered, and then (if required) be given in extremely small doses, for fear of preventing or disturbing union. With this exception, the initiatory measures of depletion and the employment of mercury are applicable (with a proviso on the degree of activity requisite in carrying them out) to all species of iritis. The further progress of the treatment is, however, in several respects different in details. In arthritic cases, after the use of the means already spoken of, should there be considerable pain, disturbing the night rest, the extract of conium may be given in doses of from five to ten grains twice or three times a day. Conium seems occasionally to exert quite a specific influence over arthritic inflammation of the eye, so that it may occasionally be exhibited, to the exclusion of any other except local remedies. Its beneficial influence, however, is not uniformly manifested in an equal degree. Hence the moderate use of mercury is preferable, which should be accompanied by alkalies, saline purges, and colchicum.

When the acute stage has passed, and the complaint is retroceding, a few grains of powdered bark generally assist in re-establishing tone in the vessels, and repressing lingering congestion. At the same time, a corresponding improvement in diet should take place; for at the commencement, in every form of iritis, spirits and fermented liquors must be forbidden; and when the patient's age or debility contra-indicates his

restriction to slops and farinaceous food, at least the quantity of meat allowed should be very moderate.

In thus describing the next course of constitutional treatment, I have not referred to a potent, and sometimes admirable remedy, aconite. The action of the drug is uncertain, and, in incautious hands, it has been productive of serious and even fatal consequences. Hence it is best to reserve aconite for cases which resist the ordinary course of treatment, and continue under constant observation. Under such circumstances, ten minims of the tincture may be prescribed thrice daily, the effects being carefully watched. I have witnessed the greatest benefit from this medicine, but am far from recommending its indiscriminate administration.

In simple iritis there is in general at the outset no call for other internal remedies than mercurials guarded from acting purgatively. In the syphilitic disease, if, as frequently happens, the patient is tormented by racking pain about the globe, forehead, and temple, with nocturnal exacerbations, we may be compelled to prescribe an opiate, and then the compound ipecacuanha powder, or one of the preparations of morphia is the best. Indeed, should full dilatation of the pupil have been obtained by belladonna, the objection to the internal use of opium falls to the ground, and any preparation deemed best suited to the case may be administered. The benefit of these anodynes is not simply palliative, but by tranquillizing the irritable frame of the patient, and perhaps procuring sleep, they contribute to place his system in a more favourable condition for receiving the curative impressions of other remedies. Much likewise may be done in allaying pain in all forms of the disease by the mercury and opium ointment, or the belladonna liniment rubbed in over the seat of pain around the orbit.

Pain is not unfrequently created by the application of belladonna to the brow in arthritic cases, apparently from the tension excited in the contractile fibres of the membrane affected with rheumatism. Such appears the simplest explanation of the circumstances, for the pain subsides on removal of the belladonna, and is quite of the rheumatic kind.

Notwithstanding this occasional inconvenience, it is right in all cases of iritis, including those of the arthritic kind, to apply belladonna; in the majority of instances its effects prove wholly salutary. When deprived of this most valuable auxiliary, in order to avoid contraction of the pupil as far as possible, we must keep the patient in a darkened room, and abstain from the exhibition of opium. As a general rule, the moistened extract should be smeared night and morning around and over the palpebræ, and be prevented from becoming dry and inert in the interval. I think this mode better while the inflammation remains, than applying a solution of belladonna or atropine to the conjunctiva. In young children it is safer to use the remedy in the form of plaster, to avoid the chance of its being conveyed to the mouth. The utility of this application in the early stages of iritis originates thus: The posterior aqueous chamber, owing to the convexity of the lens, is much shallower towards the axis of vision, or opposite the centre of the pupil, (where the posterior wall of the capsule bulges forward, and approaches the plane of the iris,) than at the periphery. The more dilated, therefore,

the pupil is, the further is its edge removed from the capsule, and *vice versâ*. Hence a dilated pupil is less liable than a contracted one to form adhesions; the adhesions if formed are longer, while of course there is greater probability of saving some portion of a large than of a small pupil from being overspread.

At a later stage the object of applying belladonna is, first, to save any portion of the pupil remaining permeable, and of its margin yet unattached; and secondly, to obtain, if possible, as inflammation subsides, the elongation and eventual rupture of adhesions already formed. And here I must mention incidentally a physiological fact, demonstrated by our occasional success in effecting the liberation of the iris after adhesion, and by the phenomena which precede such liberation. It is, that dilatation of the pupil is not merely a passive result from relaxation of the force which produces contraction, but is itself an active change. Thus, in a case where adhesions have formed, when the pupil expands under the influence of belladonna, we may notice that the margin of the iris is arched or deeply recessed from adhesion to adhesion, evidently by the exertion of an active dilating power upon the intervening spaces. We see, moreover, that the morbid bands connecting the edge of the iris to the capsule are maintained in a state of absolute tension so long as the belladonna is kept applied, and these frœna remain unbroken. Hence it is plain that dilatation of the pupil is no more a painful state than contraction—an inference confirmed by the occasional rupture of such adhesions and disengagement of the iris, as also by the disentanglement of the membrane from apertures in the cornea, effected by use of the same remedial application, belladonna.

We are more frequently successful in effecting the detachment of adhesions in cases of syphilitic than of arthritic iritis. In the former the adhesions commonly assume the shape of narrow bands at the points where the greatest thickening or tuberculation of the iris has occurred. In arthritic iritis, the inflammation being more diffuse, the adhesions are usually broad, and involve a large part of the margin of the pupil; they possess therefore much greater firmness and power of resistance to the action of belladonna than do those of the syphilitic kind, in which consequently we apply the extract, even in advanced stages of the disease, with better hope.

Mr. Carmichael, of Dublin, introduced the use of turpentine in syphilitic iritis to the notice of the profession some years since. Of its remedial influence in these cases there can be no doubt. I have exhibited it, and had occasion to be satisfied of the truth of this statement. But the medicine is very apt to disagree, and act violently upon the kidney, so that in many instances its administration cannot be persisted in; while, when borne, its power over the disease is inferior to that of mercury. Were we only to give mercury in one fixed dose, repeated at unvarying intervals, then indeed turpentine might often be a more eligible remedy; but as we can adapt the dose of mercury at once to the exigencies of the part and of the constitution, and these are seldom really at variance, we have little need of a medicine, which, though sometimes efficacious, is often irritating and distressing, and always uncertain. However, in cases of no great acuteness, which do not yield so readily as expected

under mercury, assisted by the remedies above enumerated, there can be no objection to giving the oil of turpentine a trial. A drachm may be given three times a day, or every six hours, made into an emulsion, with milk or almond mixture, the patient being warned of the probability of some little interference with the functions of the urinary organs. Should such inconvenience intervene, we should obviate it, if possible, by quietude and alkaline drink; and this failing, intermit or altogether relinquish the use of turpentine, especially if the urine become tinged with blood, and pain arise in the loins.

As iritis becomes chronic and subsides, the mercury should be further diminished. It must be entirely abandoned when once the external marks of inflammation have disappeared, and vision has regained its former degree of perfection. When we have failed to prevent the formation of a film of lymph within the pupil, still by steady perseverance with an alterative course, assisted by sarsaparilla, with soda and iodide of potassium, or in syphilitic cases with nitric acid, much diminution in the density of the effusion and improvement of vision may generally be effected. When the final failure of these endeavours is certain, though the globe in other respects retains the general indication of health, and the patient is capable of distinguishing the transit of an opaque body before the eye, there is yet a prospect of affording relief by operation. If the other eye be previously lost, such operation is to be recommended. In the chronic stage of all species of the disease, there are no more useful auxiliaries than blisters applied behind the ear or to the nape of the neck, of which situations the former is preferable. Never let a blister be placed on the temple or forehead for the relief of inflammation of the eye, for almost invariably the symptoms will be aggravated by the application, which, from undue proximity to the affected part, becomes a direct instead of a counter-irritant.

You will probably have reason to observe, even in cases checked at an early stage of the disease, the extreme liability which one attack of iritis engenders to another; a little exposure, indiscreet indulgence, and over-exertion of the eye, being often sufficient to reproduce impairment of vision, vascularity, and dulness of the iris and anterior chamber. These relapses must be promptly met by a modified use of the same remedial measures which were employed in the first instance. Owing to this tendency, a patient, on his recovery, should be cautioned against the imprudent exercise of the organ, or exposure, for any fresh attack contributes in its degree towards ultimate destruction of vision.—*Lancet, Sept.* 3, 1853, *p.* 204.

120.—CASE OF COMPLETE AMAUROSIS FOLLOWING RETINITIS, SUCCESSFULLY TREATED WITH STRYCHNIA.

By Dr. Daniel Griffin, Physician to the Limerick Infirmary.

[This patient, O'Donnell, was a labourer, aged 62. He had been ill previously to admission about five weeks. He had all the symptoms of retinitis, though little seemed to have been done for him except blistering the

occiput and vertex, which he blamed for the production of the blindness. His condition is thus described.]

The iris is sluggish in its movements, but unchanged in colour, and shows no depositions on its surface; the pupils of both eyes are perfectly black, and moderately dilated; there is a zone of red vessels round the cornea, extending a considerable distance from its edge, and the conjunctiva is slightly injected throughout; he stands with that staring, vacant look which betokens the absence of all perception of external objects; there is considerable vertigo still, but the pain is abated.

Eight leeches were applied to each temple. He was ordered blue pill, hydrargyrum cum cretâ, nitre, and Dover's powder, in moderate doses, three times a day. On November the 15th, four days after his admission, the leeches were repeated as before, and he was directed to persevere in the use of the powders, which, on the 29th had produced so little effect that they were ordered to be taken at shorter intervals.

December 1st. There is scarcely any appearance of mercurialization, and the only change observable in the eyes is the removal of the increased vascularity and their return, in this respect, to a healthy aspect: there is not, however, the least sign of returning vision, even hardly so much as the perception of light. As I rather distrusted his statement regarding the length of time he was ill—many persons of his class seeking admission to the infirmary merely for the sake of temporary support—moreover, as I suspected, from the severity of the pain and vertigo, that the affection was associated with organic disease of the brain, I was very much in despair as to his chances, and was about to dismiss him as incurable. On my visit next day, however, he told me he thought there was some slight amendment: I, therefore, directed him to remain, and ordered the following pills, one to be taken every night:—Strychnia, one grain; extract of gentian, six grains; to be divided into twelve pills: the powders to be omitted. December 9th. A decided and considerable improvement; the pills to be continued. 13th. Rather stationary since last report; to take a pill night and morning. 27th. The improvement goes on rapidly. He can see all objects around him with considerable distinctness, and walks much more steadily. January 13th, 1853. Very much improved. 26th. The right eye is perfectly restored, and the left nearly so. He says he can read his prayer-book quite as well as he ever did. Dismissed.

I observed during the progress of this case that the retina recovered its functions, not by a gradual amendment extending over its whole surface, but in parts and patches separately, almost as if these parts had no physiological connexion. It was singular to observe the odd attitudes he threw himself into as the improvement went on, to find out those parts of the membrane with which he could see when an object was placed before him, such as the hand or the finger. In all cases which have their origin in an inflammatory affection, it would seem to be of great importance to remove all traces of inflammatory action, as well as to pay extreme attention to the general health, before the use of strychnia is commenced.

This remedy has long had a high repute in the treatment of amaurosis, yet M. Riberi says, in the cases which he has hitherto administered

it he has derived little or no benefit therefrom. He suspects, however, that in some of these he has not persevered long enough; and remarks, that the successful cases hitherto on record seem to indicate its use in incomplete rather than complete amaurosis. I believe he always used the endermic method; and, from some published cases of his, he seems to depend more on nux vomica than on strychnia. It is singular to observe what a small amount of this drug is sufficient for success in some instances. The whole quantity which produced a complete restoration to sight in the case of O'Donnell was somewhat short of eight grains, and this spread over a space of about eight weeks, making about one grain per week.—*Dublin Quarterly Journal, Aug.* 1853, *p.* 245.

121.—CASES OF EPIPHORA.

By Benjamin Bell, Esq.

[The term 'Epiphora' is here restricted to a watery state of the eye, produced by some obstruction in the puncta or canaliculi. There is scarcely any affection so trivial which the surgeon undertakes with less hope of ultimate satisfaction; for all know that some cases resist all ordinary measures, and yet present no obvious indication for their treatment.]

Mr. Bowman has pointed out a cause of disappointment which has hitherto escaped notice, and the discrimination of which will probably enable us to diminish very considerably the number of cases in which relief cannot be afforded. The epiphora depends, in these instances, not upon any obstruction, but upon the position of the inferior punctum. There may be little or no eversion of the margin of the lid, but "the natural prominence on which the punctum is placed, is wanting, and, instead of it, there is a flattened or rounded cutaneous surface, on which the orifice may be discerned (though with difficulty) at a little distance from the mucous surface of the lid, and much reduced in size, being in fact never wetted by the tears, but dry and contracted." The more frequent causes of this displacement of the punctum seem to be either a chronic inflammation of the neighbouring conjunctiva causing thickening and slight eversion, or some cutaneous affection of the lower lid. For a fuller illustration of the subject we refer to Mr. Bowman's interesting paper in the thirty-fourth volume of the 'Medico-Chirurgical Transactions.' The treatment consists in slitting up the canal from the punctum to such an extent as to carry back the orifice to that part of the conjunctival surface where the tears are collected. It is necessary, for a few days, to open up the wound by means of a probe, and thus convert the canal into a groove.

The first case in which I had recourse to this proceeding was a lad of sixteen, who had met with a serious laceration of the eyelids some years previously. The healing process had caused a slight displacement of the punctum, without eversion of the lid itself; and the consequence was, that the tears were constantly collecting and standing in the eye, and so producing not only much discomfort, but considerable disturbance of vision. I performed the operation already described, with the effect of

completely remedying the evil. The next case was a young female of seventeen, in whom the symptoms were similar, although the displacement of the punctum seemed to have originated in the more common cause of chronic inflammation of the conjunctiva. The same treatment was equally successful.

I may remark in passing, that in performing the little operation, it is of importance to employ a probe large enough to distend and steady the canal. I have since had recourse to a similar procedure under circumstances somewhat different. A lady of middle age had an obstinate vascular induration, involving the punctum and causing a displacement of it, so slight as to be scarcely visible, but sufficient to cause troublesome epiphora when she was exposed to the open air or a strong light. Seeing no speedier mode of removing the inconvenience, I passed a probe along the canaliculus, and then, introducing the point of a fine iris knife, divided the entire swelling. The epiphora ceased, the induration quickly disappeared, and the punctum resumed its functious.—*Monthly Journal of Med. Science, Sept.* 1853, *p.* 210.

122.—ON REMITTENT OR STRUMOUS OPHTHALMIA.

By Henry Hancock, Esq.

[The primary cause of this disease, Mr Hancock believes to be in not adapting the food to the digestive powers of the child; and a second to the close stifling and unwholesome condition of the air in the places where such patients are generally found. Remarking upon the treatment, he says,]

The objects to be desired in the treatment of remittent ophthalmia are, the relief of the organs of digestion, and the correction of the secretions, as when these two points are attained, the other symptoms will improve, and the eyes will share in the general change for the better. To achieve these, however, a systematic plan must be adopted, embracing diet, clothing, good nursing, as well as medicine, otherwise but little benefit will result. Abstract remedies, whether for the eyes alone, or the system generally, are of but little use. As far as I have observed medicine alone will scarcely ever effect a cure; diet alone will rarely do so, although I have seen children, who from improved air, and comfort, and light diet, have lost the intolerance of light without the aid of medicine at all; but these are very rare instances. Very unsettled and varied views have hitherto obtained as to the true character of the complaint, and the treatment consequently has been equally varied and undetermined. Some regard the disease as of a purely local character, to be combated by local applications and counter-irritants; others, again, as depending upon irritability of the nervous system, viewing the photophobia or intolerance of light as cause rather than effect, and requiring sedatives, both locally and generally; others, again, as depending upon disease of the mesenteric glands, or upon gastric irritation or morbid secretions, to be treated by remedies adapted to such condition, whilst most agree in considering it connected with anæmia, cachexia, or general debility; insuffi-

cient nutrition, or the want of red globules, urging the employment of vegetable tonics, the various preparations of steel, generous diet, &c. Remittent ophthalmia may almost always be traced to a disordered state of the digestive organs—a want of digestive power, an incapability of properly assimilating the food. The liver becomes sluggish, irregular in its action, and frequently enlarged; the mesenteric glands are enlarged, the secretions vitiated, and the blood consequently becoming impure, the whole system is deranged. The child is pale, weak, and fractious, a torment to itself and every one about it; its appetite is lost, or very capricious, and it is said to be strumous, weak, and delicate; but this condition need not become permanent if the case be judiciously treated; if it be not at the onset erroneously supposed to depend upon cachexia or debility, and treated according to that supposition. The debility is, in most cases, more apparent than real; it is commonly that of irritation or of oppression, rather than of actual weakness. Remove the cause, and the debility will usually disappear *pari passu*.

[Mr. Hancock uses no local applications in these cases, except where the cornea has given way and the iris protrudes—in which case he touches the part with caustic and applies the extract of belladonna round the eye.]

The treatment should commence with an emetic of tartrate of antimony, given as advised by Mr. M'Kenzie—viz., in minute doses, at frequent intervals, until free vomiting is induced; and this should be done in all cases, however attenuated or however stout the child may appear. It has frequently been remarked to me, "Surely you would not order that poor child an emetic, it is so attenuated and starved; its stomach requires filling rather than emptying." My reply has always been, "It may be true that the child has not much in its stomach, but what it has is evidently offensive and unwholesome, and consequently the sooner it is ejected the better." What we desire is to relieve the stomach of its offensive contents, and to render its secretions more natural; to correct and restore the secretions of the kidneys, liver, and other grandular structures, and to influence the capillary system generally, so as to improve the condition of the skin and mucous membrane, and to allay the morbid excitement of the nervous system. This is best done by the tartrate of antimony, given as above, and it is very important that attention should be paid to the mode of administering this remedy. The mere inducement of vomiting—the simple evacuation of the contents of the stomach—is not sufficient, unless the medicine, by being absorbed into the blood, is enabled to produce the other results; hence I have not found anything like the same amount of good resulting from the sulphate of zinc, from the ipecacuanha powder, or even from the tartrate of antimony itself, when the latter is given in a sufficiently large dose to cause vomiting at once. The following will be found a very convenient form: Tartrate of antimony, four grains; syrup, half an ounce; cinnamon water, three ounces; distilled water, eight ounces, as a mixture. For a child under three years of age, two teaspoonfuls of this medicine should be given every ten minutes until free vomiting is induced; above this age, a table-spoonful may be given at the same intervals. It commonly re-

quires four or five doses to produce the full effect—in some instances more, and in a few less. The treatment should be repeated daily until the intolerance of light begins to subside, which it will mostly do after the first or second day, although in some of the more obstinate cases four or even six days will elapse before the desired result is obtained. When, however, this takes place, the emetics should be discontinued, and a powder of calomel and rhubarb or mercury-with-chalk, with compound scammony powder, given every night, or every alternate night, until the tongue becomes cleaner, the abdomen softer and flatter, and the alvine secretions more natural; and as this change takes place improvement of the eyes commonly accompanies it, if attention be paid to the diet at the same time. When the attack has been complicated with eruption, aperients should be continued until such eruption has disappeared.

When, however, the attack of ophthalmia has been preceded by measles, small-pox, scarlet fever, or any other depressing complaint of that nature, or if the child has been exposed to excessive want, is much attenuated, and covered with a cold clammy perspiration, the greatest caution should be observed in the administration of calomel, even in small doses and as an aperient; and in no instance should more than one dose of this medicine be given without the patient being seen, as, should ptyalism take place, such extensive sloughing of the fauces, gums, and and even the lips and cheeks, will sometimes ensue, as to destroy the child in a very few days, if not hours. I was sent for, between three or four years ago, to see a child three years of age, who had been labouring under this form of ophthalmia, succeeding measles. The gentleman in attendance had sent six powders, each containing five grains of mercury-with-chalk, directing one to be given thrice daily. The child took four, when profuse salivation set in, with swelling of the tongue, lips, and cheeks. When I saw it on the following morning it was almost in a state of collapse; a gangrenous spot extended from the side of the mouth over the cheek; there was scarcely any pulse to be felt at the wrist, and the surface of the body was cold and clammy. The child died in a very few hours. The late Dr. Clendinning related a case to me in which the child had suffered from measles and subsequent affection of the lungs, and who, in addition, had been exposed to great hardship during a sea voyage. The Doctor had prescribed a single dose of mercury-with-chalk and rhubarb, and this produced similar mischief, and was attended by the same unfortunate results.

In cases accompanied with extreme attenuation and cold clammy state of the skin, it is safer to abstain from calomel altogether, and to substitute the compound scammony powder with taraxacum and henbane; or if mercury should from any reason be especially indicated, to combine it with the sulphate of quinine, but in no instance should the medicine be pushed with the view of producing ptyalism. After the bowels have been thoroughly cleansed by aperient medicines, Mr. Lawrence advises the employment of tonic medicines, of which he considers bark the best, and quinine the most advantageous form, entirely agreeing with Mr. Mackenzie, who says, "in most cases quinine has acted like a charm, abating commonly in a few days the excessive intolerance of light and profuse epiphora, promoting the absorption of pustules, and hastening the cica-

trization of ulcers of the cornea." He adds, quinine may be used as soon as the stomach is cleansed by an emetic, and the bowels put to rights by repeated doses of calomel and rhubarb; but when the pulse is very quick, small doses of tartrate of antimony are preferable; or when impetigenous eruption, then a course of purgatives. He also adds, that in pallid and languid subjects steel may be given with advantage, recommending the carbonate or tartrate of iron, tincture of muriate of iron, wine of iron, or the latter combined with dilute sulphuric acid. Dr. Henry Williams considers the sulphate of beeberine much superior to the sulphate of quinine, not only because it is cheaper, but because it is less likely to excite the circulation or affect the nervous system. The dose is two grains night and morning.

I do not estimate these remedies so highly as Messrs. Lawrence and M'Kenzie appear to do. I have so frequently seen relapses follow their exhibition that I attribute the intractability which has usually characterized remittent ophthalmia in a great measure to their employment, and the general management as to diet, &c., which naturally accompanies them. The same degree of caution is necessary in the use of tonic medicines in this disease as in remittent fever, and, from what I have observed, I believe they never should be given whilst photophobia exists, or in the common and ordinary forms of the complaint, as it appears to me that their employment is based upon wrong principles, founded upon erroneous notions of the pathology of the disease, and prejudicial by causing relapse, prolonging the duration of the attack, and thus doing considerable mischief. It should be borne in mind that lassitude and weakness are not the causes of remittent ophthalmia any more than they are of remittent fever; they are consequent upon the causes producing the disease, and are just as much effects as the ophthalmia itself. If we overlook this fact, if we endeavour to build the patient up by tonics and strengthening diet, we defeat our object, we increase the lassitude and debility by oppressing the patients by our remedies, since their digestive organs have not the power of assimilating medicines of this description; if, on the other hand, we try to remove the oppression which is bearing the patient down; if we confine our attention to the improvement of the digestive functions and the correction of the secretions, we find that the symptoms of lassitude and weakness gradually disappear, the morbid irritability of the nervous system and intolerance of light subside, and the child improves in health and spirits; after the tongue has become clean, the secretions more natural, and the intolerance of light has been subdued by emetics. In those extreme cases where sloughing of the cornea has set in, or where the complaint is accompanied with profuse perspiration, and the attacks assume the paroxysmal or intermittent character, quinine may be employed with advantage, but even under these circumstances its effects should be cautiously watched, and it is better to combine it with some gentle aperient.

In those cases in which there appears to be a want of the due proportion of red globules in the blood, steel may be given when the urgent symptoms of ophthalmia have subsided, but not before. In exhibiting this medicine, I am guided principally by the appearance of the tongue, gums, and inside of the lips. When the tongue is tremulous, and with

the gums and inside of the lips paler than natural, I have found steel useful, but not so when these parts present the opposite character. I do not consider mere pallor of the countenance as any criterion of the utility of this medicine. The preparation which I have found to agree best is the tincture of iron prepared by Mr. Boutell. The remedy upon which I place the greatest reliance to complete the cure is the hydriodate of potass, in doses of from half to one or even two grains thrice daily, according to the age of the patient, and in combination with the tincture of iodine, as advised by Lugol. I do not attribute the benefit resulting from this medicine in any degree to its supposed specific influence over scrofula, but rather to that which it exerts upon the stomach and intestines, exciting appetite and promoting the gastric functions, at the same time stimulating the absorbents to activity, whilst its supposed effect upon the nervous plexuses, and great sympathetic nerve, extending to the lenticular ganglion and ophthalmic division of the fifth and sympathetic branches of the eye and orbit, may increase its efficacy in this disease. It should not, however, be employed until after the intolerance of light has yielded to the emetics and alteratives; but when so administered it will be found a most valuable agent, as, by correcting the original cause of the disease, it holds out the most favourable prospect of destroying the tendency to relapse, which is one of the chief characteristics of this complaint, and so disheartening to all concerned. In those instances where the remittent ophthalmia attacks children of a decidedly strumous habit of body, cod-liver oil may be advantageously substituted for the hydriodate of potass, after this medicine has been given for a week or ten days. It may be given in doses of one drachm twice daily, but always after a meal, as upon an empty stomach it is liable to cause sickness. Where the child is highly nervous and excitable, henbane, in tincture or extract, thrice daily, in doses proportionate to the age of the individual, is very useful, but, like the hydriodate of potass, should always be preceded by emetics and alterative medicines.

Dupuytren prescribed belladonna either in powder or extract; of the extract he ordered one to three grains, divided into six pills, two to be taken every hour; of the powder, one to four grains every hour, and, to prevent narcotism, he gave the artificial seltzer water. Dr. Kopp strongly recommends the conium maculatum in the following form:— Extract of conium, four drachms; cinnamon water, two ounces: dose for a child two or three years old, four drops thrice daily, to be increased one drop daily. Whilst Dr. Spengler advocates the coneine, or active principle of conium, one-sixteenth part of a grain in six ounces of water: dose, one drachm thrice daily.

I have never employed this preparation; but I prefer henbane either to belladonna or conium, as being more certain in its effects, and I usually prescribe the extract in doses of from one to five grains thrice daily, according to the age of the patient. At the same time it must be admitted that henbane merely acts as a palliative, soothing excitability and irritation when set up; it does not strike at the root of the mischief in the same way as the hydriodate of potass, and consequently we cannot be surprised at the frequency with which relapse attends its exhibition.

Like quinine, it requires watching, and we should carefully provide against torpor of the bowels, which will sometimes ensue.

Other cases occur in which the presence of worms in the alimentary canal keeps up the symptoms, which will not yield to the usual treatment. A dose of turpentine and castor oil answers extremely well under such circumstances, and this may be repeated if necessary.

Again, attention should be paid to the state of a child's mouth and teeth. Intractable cases will frequently improve after the abstraction of a decayed tooth, or the lancing the tense inflamed gum over a tooth pushing its way through. In many instances the overcrowding of the teeth is the cause of much suffering, the jaw being too contracted to admit of their due and regular development. This is often very prejudicial to the ophthalmic symptoms, and is only overcome by the abstraction of one or more of the teeth, which, affording sufficient space to the remainder, removes the cause of irritation.

[Mr. Hancock has no faith whatever in any form of counter-irritation, but strenuously urges the regulation of the diet, which should be of the plainest character. He states that severe relapses have returned after a hearty solid meal.]—*Lancet, July* 30, 1853, *p.* 91.

123.—ON PURULENT OPHTHALMIA IN THE INFANT.

By John F. France, Esq.

[In the infant this disease is easily diagnosed. When it appears within a week after birth, when the lids are of a vivid red colour and so swollen that they are separated with difficulty, a purulent fluid escaping, and the conjunctiva inflamed and chemosed, there can be no doubt of the nature of the complaint. In catarrhal ophthalmia there is not so great inflammation, the secretion is not purulent, and there is no tendency to œdema of the lids or chemosis of the conjunctiva.]

The treatment of infantile purulent ophthalmia consists in the following measures:—Should inflammation be very severe, the tumidity of the palpebræ and conjunctiva excessive, and every indication of intense vascular excitement be present, it is right to deplete to a small extent by scarifying the conjunctiva with a lancet. From two or three superficial strokes a sufficient flow of blood will be readily obtained by fomentation. But cases demanding direct depletion are exceptional; the immense majority, formidable as they are in appearance, are perfectly controllable by other means. The bowels must be freed by a purgative combined with some preparation of mercury. I generally prescribe for this purpose the gray powder with rhubarb, which usually effects all that is wished in the first instance—viz., to procure free secretion along the intestinal canal and from the glands associated with it; a slight laxative action should be maintained subsequently by castor-oil. The whole constitutional treatment is comprised in these simple measures; and the local is scarcely more complex.

We must first enjoin thorough cleansing of the eyes from all purulent secretion by tepid ablution. The sponge, I will here remark, should on no account be used for any other purpose, as the disease is highly conta-

gious. Ablution should be repeated at least every hour, the upper lid being gently detached from the lower; the warm water suffered to flow between them, and wash away all accumulated discharge. You can hardly be too precise and earnest in enjoining the observance of these points, for their neglect diminishes in a serious ratio the chances of perfect recovery. The use of a syringe is advantageous for the purpose of effectually cleansing the surface of the conjunctiva, and may be recommended accordingly when there is reason to think it will be intelligently and carefully handled. In the larger number of cases, however, among the poor, it is safer to direct simply thorough sluicing between the lids, as just described. This plan is quite adequate to accomplish the object in view, and is free from the chance of splashing morbid secretion into the eyes of the attendant—an accident which an ill-managed jet of fluid from a syringe might cause.

Subservient to the prime object of removing all discharge is the use of some unirritating ointment to obviate agglutination of the palpebræ, and prevent accumulation of the purulent matter during sleep. Spermaceti or zinc ointment may with this view be smeared along the edges of both palpebræ and upon the surface of the lower one, which is often overlapped by the tumefied upper lid. Having thus secured a free outlet for discharge, and relieved the conjunctival surfaces from the purulent and lachrymal secretion, the next point is to employ a collyrium. That which I have found of the greatest service, and habitually use, is a solution of nitrate of silver, a grain or a grain and a half being dissolved in the ounce of rose-water. Two or three drops of this should be instilled upon the conjunctiva three times daily, the part having been first cleansed from all matter which may have gathered since the last ablution. Continuing this application for four or five days, you will find the eyes so lately streaming with pus and intensely inflamed, gradually assuming a less angry aspect, the swelling diminishing, the discharge rapidly lessening, and the affected organ returning progressively to the state of health.

As soon as all chemosis has disappeared, tumefaction of the integuments has abated, and the quantity of purulent secretion declined, it is advisable to diminish the frequency with which the nitrate of silver collyrium is used. At a still later stage of convalescence it may be changed for a solution of sulphate of zinc. The compound zinc collyrium of our 'Guy's Pharmacopœia' is eligible at this period of the disease. Its composition I have previously mentioned—viz., sulphate of zinc, two grains; opium wine, two drachms; and rose water, six drachms. The reason for substituting this, as early as the circumstances of the case will permit, for the nitrate of silver drops, is to avoid the chance of discolouring the conjunctiva. The possibility of such discolouration is not for a moment to be weighed in the scale against the striking utility of this collyrium, yet it does constitute a sufficient ground for discontinuing it when the complaint is unquestionably subdued. A solution of alum (three grains to the ounce) may be employed in the same way as the compound zinc collyrium, to conclude the cure which the nitrate of silver has brought about. Other astringent solutions as well, are, I believe, sometimes used instead of the nitrate of silver collyrium from

the beginning, but I would emphatically dissuade you from trusting to them. This is not a disease with which it is justifiable to experiment or temporize. With the fullest confidence I can recommend the plan of treatment above described, because I have always found it successful; and I deprecate resort to other means, because the uncertainty of them is evident from the unsuccessful cases every now and then applying too late at our Eye Infirmary.

When the cornea is found to be hazy or opaque the treatment does not essentially differ from that already described. If it be ulcerated the only addition indicated is greater care to avoid the slightest pressure on the globe in examination, or in the processes of ablution, and injecting collyria; but, if the ulceration has extended through the laminæ of the cornea, and opened the anterior chamber, a point of nitrate of silver may be sometimes advantageously applied, to excite healing action at the bottom of the ulcer and procure quicker closure of the opening.

If the iris has prolapsed, or there is reason to expect that it will do so, owing to the depth to which an ulcer of the cornea has advanced, it is proper to apply belladonna around the orbit, with the view of obtaining dilatation of the pupil and consequent retraction and disentanglement of the iris. The application of belladonna would supersede that of caustic, if the prolapse were quite recent, until the iris should have withdrawn from the corneal aperture. The nurse, however, must be directed to prevent any belladonna reaching the mouth of the little patient, either by means of the discharge, or its own fingers, or the mother's breast. The best mode of guarding against so serious an accident is to apply the extract by simply smearing it over the inner portion of two rings of soap or resin plaster, which may then be placed so as to surround the patient's orbits. These must be renewed or moistened twice a day.

After all morbid discharge has ceased, the case has become chronic, and any ulcer which may have existed has closed or shows a disposition to do so, the black wash, composed of seven grains of calomel to an ounce of lime water, is extremely useful, promoting cicatrization and tending to disperse the hazy opacity which always surrounds a cicatrix. Some degree of opacity may result from the inflammation to which the cornea has been subjected, independently of ulceration; and in such cases likewise, in their chronic stage, the black wash is beneficial.

If destruction of the entire cornea has taken place it can be of no avail in restoring vision to apply nitrate of silver to the part, or belladonna to the brow; the treatment then becomes merely palliative, and the only remaining object is to relieve the conjunctival inflammation and control the deformity which ensues.—*Lancet, April* 30, 1853, *p.* 401.

124—THE CURE OF SQUINTING BY THE USE OF PRISMATIC SPECTACLES.

By T. Spencer Wells, Esq.

[This method of treating squinting was first recommended by Dr. Kurke, a Dutch physician. The following remarks are a summary of the experience of Dr. Von Gräfe, of Berlin, who has tried the plan very extensively.]

The glasses are fitted in ordinary spectacle frames. They are simple prisms of various degrees, from 1 to 20. It would be possible to make them achromatic; but I have only seen the ordinary ones in use.

The operation upon the sound eye, as explained by Dr. Von Gräfe, is as follows :—When a prismatic glass is held before one eye on any point of sight in the converging direction of the optic axis, the light falling upon this eye is diverted from its former course, and no longer arrives upon the macula lutea, but forms a more or less excentric picture, according to the refracting power of the prism. From its position, this is no longer combined with the central picture on the other retina into one perception, but is perceived separately. Thus the object upon which the optic axes converge is seen double.

Theoretically this phenomenon should be observed when a prism of very moderate power is used; but observation teaches us, on the contrary, that no diplopia follows when weak prisms are employed, especially if the base be directed outwards. This might be explained in two ways. Either the picture on one retina is suppressed, or the eye which sees through the prism takes a new position, which is not perceived by the observer, so that the picture is not formed excentrically, but falls, like that of the other eye, upon the macula lutea. The improbability of the first supposition at once appears from the fact that no diplopia is produced by weak prisms, while more powerful ones produce it at once, and the greater the excentric position of the picture the more easily it would be suppressed. The truth of the second explanation is established by a more exact observation of the position of the eyes. On applying the prism we see the optic axes deviate from their former position and return to it as the prism is removed. At the moment of removal the object is seen double, because both axes are not directed upon it. Thus in order to prevent diplopia, an involuntary strabismus occurs and we can produce this in any direction by corresponding positions of the prism, but most decidedly so inwards, less so outwards, much less so downwards, and least of all upwards. We can also produce strabismus in this manner in diagonal directions.

It follows that by the use of prismatic glasses we have the power of altering the tension of any given muscle of one eye without producing any alteration in the other. This is the peculiar advantage which none of the ordinary orthopœdic means formerly employed possessed. On the contrary, the result hoped for from their employment was not only frequently frustrated by the movements of association of the two eyes, but sometimes, as in cases of recent muscular paralysis, an effect directly the reverse of that desired was brought about.

The increased contraction called for from the relaxed muscle by the use of prismatic glasses is the source of their curative power. For example, in a case of convergent strabismus with diplopia a prism with its base directed outwards alters the position of the excentric picture on the retina of the squinting eye so greatly, and brings it so near the macula lutea, that single vision follows any voluntary power conveyed to the abductor muscle. Consequently, the angle of the squint is somewhat diminished. As it becomes less, and the power of the abductor increases, prisms must be used gradually diminishing in power, until at last a per-

fectly accurate corresponding position of the eyes is attained at all distances,—in other words, the squint is perfectly cured. I have seen patients of Dr. Von Gräfe's who were thus completely cured in about six weeks, commencing with strong glasses of the numbers from 15 to 20, and gradually wearing them less and less powerful. They are principally applicable in young persons, who squint but slightly; and in cases of diplopia biocularis, where the abnormal position of one eye is only observed when an object some feet distant is regarded, they are the only certain means of cure.

In more marked degrees of strabismus the muscle must be divided, because the use of strong prisms, and the efforts of the patient to avoid diplopia, become very troublesome; and if the union of the two images causes too great an effort, an effect is produced exactly the opposite of that desired; for if the diplopia cannot be removed, the double images separate still further from each other, because, when distant, they are not so intolerable as when near.

In many cases after operations for the cure of strabismus by division of the muscle in one or both eyes, although great improvement follows, the cure is not perfect. Some degrees of squint still persists in one eye, and probably some diplopia when objects at certain distances from the eye are attentively regarded. In such cases, the prismatic glasses suffice to complete the cure commenced by the operation. I saw several instances in which this proved to be the case in the practice of Dr. Von Gräfe.

I have patients under my care at present who are wearing these spectacles, and I shall take a future opportunity of making the results known. Messrs. Watkins and Hill, opticians, of Charing-cross, have had the glasses ground and fitted for me, and make them at any angle which may be required. Messrs. Bland and Long, of Fleet-strect, also make them.—*Med. Times and Gazette, August* 27, 1853, *p.* 216.

125.—ON THE USE OF TWO NEEDLES AT ONCE IN CERTAIN OPERATIONS ON THE EYE, ESPECIALLY THOSE FOR CAPSULAR CATARACT AND ARTIFICIAL PUPIL.

By William Bowman, Esq., F.R.S.

The operation consists in the simultaneous employment of two needles introduced at different points through the outer coat, and made to act in concert upon false membranes, opaque capsule, or iris, or even on the lens itself under certain circumstances. Several advantages attend this mode of operating. Opaque portions of capsule are often very tough, and, being attached to the suspensory ligament of the lens, or to the pupillary borders of the iris, these extensile structures readily allow the opaque membrane to recede before the needle, rather than be torn or cut through, and the surgeon vainly sweeps the membrane before the instrument from side to side, at the risk of serious injury, and consecutive inflammation of the ciliary processes or iris. Two needles, brought to

bear upon the opaque capsule from different sides of the cornea or sclerotica, furnish each other with a point of resistance, and the capsule may be torn open or cut at pleasure. If it be reticulated, it is possible to twist one of the needles round and round the band so as to get a hold upon it in case it should prove very tough. The needles usually act perfectly if passed through any convenient opposite points of the margin of the cornea, the pupil being always, where possible, dilated by atropine. It is but seldom desirable that one of the needles should be passed through the sclerotica. Both the hands of the operator being engaged, it is necessary that the lids should be held open, either by an assistant or by the wire speculum. The second needle may be used in cases where the first, or single needle, has failed to cut through the capsule. The instruments are the ordinary cataract needle, the stem cylindrical and of a size to easily occupy the corneal puncture, the point either straight and cutting, or slightly curved, according to circumstances. In no case is it necessary to enter the instrument beyond half an inch in depth; the stem may therefore be made thicker from this distance. This plan of operating enables the surgeon to cut through softened and rotten iris, without dragging it from its attachment, and otherwise injuring the interior of the globe. Mr. Bowman has used it successfully in the formation of artificial pupil.—*Lancet, June* 11, 1853, *p.* 545.

126.—ON THE USE OF AN ARTIFICIAL MEMBRANA TYMPANI, IN CASES OF DEAFNESS, DEPENDENT UPON PERFORATION OR DESTRUCTION OF THE NATURAL ORGAN.

By Joseph Toynbee, Esq., F.R.S.

[As a test of the merit of Mr. Toynbee's ingenious invention, we need only observe, that it has obtained the medal of the Society of Arts. He thus describes it:]

The artificial membrana tympani made by Messrs. Weiss, from these directions, has hitherto been perfectly successful. As supplied by them, the portion of vulcanised India rubber or gutta percha is about three-quarters of an inch in diameter, which leaves sufficient margin for the surgeon to cut out a membrane of any shape that may seem to him desirable, and to leave the silver plate either in the centre or towards the circumference, at his discretion. The silver wire is of sufficient length to admit of the membrane being introduced or withdrawn by the patient, but is not perceived externally, except upon especial observation. A second kind of artificial membrane is made, by fixing the layer of gutta percha or vulcanized India rubber between two very delicate silver rings, from the eighth to the sixth of an inch in diameter; these rings are rivetted together, leaving a portion of the membrane drawn moderately tense in their centre; a margin of the membrane is also left beyond the circumference of the rings, so as to prevent the latter being in contact with and irritating the tube of the ear. To the surface of one of these rings the silver wire is fixed by two branches, and they should be joined, so that the outer surface of the rings should look obliquely out-

wards and forwards, instead of directly outwards, thus imitating the direction of the natural membrana tympani. This kind of membrane is often preferable to that previously described, if the meatus is sufficiently large to admit of its passage. A pair of forceps is made, whereby the artificial membrane can be more easily introduced and withdrawn.

[The following remarks are very interesting:]—

The cases in which the artificial membrana tympani is of the greatest benefit are those where there is a well-defined aperture in the natural membrane; or, if it be entirely absent, where there is simple hypertrophy of the mucous membrane of the tympanum, with or without discharge from its surface. In these cases, it will be found that the organ has by no means entirely lost its power of discerning sounds; as a general rule, the human voice is heard when the mouth of the speaker is situated within about a foot of the patient's ear, and when the sounds are spoken slowly and distinctly. The diminished power of hearing just noticed, while it entirely excludes the sufferer from the advantages of general conversation, is, however, greatly aggravated when, to the affection of the membrana tympani and mucous membrane of the tympanum, the stapes has become anchylosed to the fenestra ovalis, or the nervous expansions have been injured. In such cases where the patients require to be shouted to close to, the ear, the artificial membrane will not prove of any service.

The mode of applying the Artificial Membrana Tympani.—As in cases of perforation or destruction of the membrana tympani there is so frequently catarrhal inflammation of the mucous membrane of the tympanum, it is obviously important that no foreign substance should be placed in contact with that membrane; and, as there is always a margin of the membrana tympani remaining, the object of the surgeon should be to keep the artificial membrane external to the latter. After carefully noting the size of the inner extremity of the meatus to which the natural membrana tympani was attached, the operator should then cut the artificial membrane as nearly of the size and shape of the natural one as possible, taking care at the same time to keep the margin quite smooth and regular. The patient must then be placed with the head inclined to the opposite shoulder, while a strong light is thrown into the meatus, which, if liable to discharge, should have been previously syringed. The operator will now take the artificial membrane, and, having moistened it with water, pass it, by means of the silver wire, gently inwards, until it has reached what he considers the natural position. This he will ascertain by the occurrence of a faint bubbling sound, caused by the escape of the slightly compressed air beyond it; he will also feel a slight obstruction offered to its further passage by the remnant of the natural membrane. Should he attempt to pass the artificial membrane beyond this point, the patient will complain of pain, which until then had not been felt. The most certain test, however, of the artificial membrane having been properly placed, is the sensation of the patient, who discovers, by the sound of his own voice, or that of the surgeon, or by the movement of his tongue and lips, that his hearing has been suddenly much improved.

It will be imagined, that great care must be taken to cut the membrane so that it shall fit the inner extremity of the meatus with exactness, since, if too large, it would cause discomfort; and if too small, it would not fulfil its purpose of rendering the tympanum an air-tight cavity. It is not easy, in all cases, to fit the artificial membrane exactly to the inner extremity of the meatus, so as not to allow of any communication between the air in the tympanum and that in the external meatus; this is, however, the object which should always be sought to be attained. At first, the patient should be instructed not to use the artificial membrane for more than two hours daily; and, if he complains of an uncomfortable feeling, one hour, or even half an hour, will be sufficient.

It would, perhaps, be expected, that the contact of a foreign body, like the artificial membrana tympani, with the wall of the external meatus, would soon become intolerable; such, however, is not the case, and several patients have left my room without being able to say, from the sensation in the ear, whether any foreign body were there; many have now worn this apparatus daily, during several months, without having suffered the slightest pain. The explanation of this circumstance may be found in the fact, that the most sensitive part of the meatus externus is about its centre, the membrane in the immediate vicinity of the membrana tympani not being so abundantly supplied with nerves; another explanation is, that the circumference of the artificial membrane presses with extreme gentleness against the wall of the meatus.

The results of the application of the artificial organ have been much more satisfactory than I had reason to anticipate. I have already used it beneficially in nearly fifty cases.—*Med. Times and Gazette, July* 9, 1853, *p.* 45.

MIDWIFERY,

AND THE DISEASES OF WOMEN.

127.—ARTIFICIAL DILATATION OF THE OS UTERI.

By Dr. T. E. Rawson.

[Although Dr. Rawson is no advocate for meddlesome interference in cases of labour, he gives the following example of the value of artificial dilatation of the os uteri.]

A few years ago, I was sent for on the Tuesday morning to attend Mrs. B., living about six miles from my home. She was a rather stout person, of dark complexion, had been married about twelve months, and was *fifty years of age.* She had, moreover, lost one leg, and this was her *first child.* On my arrival, I was informed she had been suffering severe and regular pains for several hours. On making an examination, I found the pelvis well formed and roomy, but the os uteri was *rigid and firmly closed.* Her pains, which were strong, recurred about every seven or ten minutes. After staying several hours, without observing any relaxation of the os uteri, I left her, but was summoned to her again the same night. I found matters precisely in the same state, but she had become impatient and dispirited. I bled her in the arm in a full stream to syncope, hoping by this means to induce relaxation of the os uteri, but without effect. Her bowels were relieved by castor oil, and the next morning I gave her a full dose of opium, and left her. In the evening of Wednesday I visited her again. The pains had not diminished in force or frequency, but the os uteri had not as yet given way in the least. She had, however, become much more hopeful and cheerful, as I had before assured her there was no danger, and that it was a mere question of time and patience. She had had short intervals of sleep between the pains, and her appetite had much improved. I now gave her repeated doses of tartarized antimony, keeping up a constant nausea, but still without any relaxing effect on the os uteri. On the Thursday morning I had her placed in a warm bath, but to no purpose. I therefore ordered her to continue the nauseating doses of antimony, and again left her till the evening. I then found her still in the same general condition, hopeful, and without any symptom of exhaustion. The pains were still strong and regular; no change in the os uteri.

What was to be done? I resolved on trying the effect of artificial dilatation. After some time, and with considerable difficulty, I succeeded in introducing the point of the index finger through the os uteri, then two fingers, and subsequently all the fingers and thumb conically disposed. By patient perseverance I gradually dilated the os uteri to the size of a crown piece; I then left her for the night, and, on Friday morning,

found the membranes and head slightly protruding through the os. I then ruptured the membranes and gradually increased the dilatation, slipping the os uteri back to the broadest part of the head. No further progress was made during Friday, though the pains continued unabated in force and frequency. During Saturday, I gave her frequently repeated doses of ergot of rye, which had some effect in increasing the expulsive efforts of the uterus, but by Sunday the head of the fœtus had only reached the brim of the pelvis. After some little further progress had been made in the second stage I applied the long forceps and slowly removed a large, healthy, and living child, on Monday morning. The mother made a rapid recovery, after one of the most tedious labours on record, having lasted about 150 hours!

I think it will be admitted that in this case artificial dilatation of the os uteri was not only justifiable, but was the only alternative under the circumstances. This instructive case proves how little *mere tediousness* constitutes an element of danger in labour. Probably the bleeding and the other antiphlogistic means prevented any febrile or inflammatory action. This case also exemplifies the great powers of endurance of nature, when there are no special mechanical impediments. The pains never diminished in force from the beginning; the pulse retained its fulness, and the system its general powers to the last, except during the action of the antimony. She was more cheerful and hopeful, and enjoyed a better appetite on the last day than on the first.

I have met with some few cases where the os uteri, only partially dilated, has been carried down even through the os externum; in such instances there can be no doubt of the propriety of artificial dilatation.—*Lancet, July* 23, 1853, *p.* 86.

128.—A CASE OF PLACENTA PRÆVIA, IN WHICH GALVANISM WAS EMPLOYED.

By W. Boyle Chavasse, Esq., Resident Surgeon-Accoucheur to the General Dispensary, Birmingham.

[On March 21st, 1853, Mr. Chavasse was called to see a case of violent flooding occurring in a poor half-starved, debilitated woman. She had been in destitute circumstances for some time. She was in the eighth month of her sixth pregnancy. She had commenced flooding a month before, and had flooded four times since. When Mr. Chavasse arrived, she appeared almost in articulo mortis. A slow oozing was still going on.]

The uterus was baggy and flaccid; the os was dilated to little more than the size of half-a-crown, and was rigid and undilatable; it lay very high up, the placenta occupying its whole circumference; there were no pains. In her exhausted state, turning seemed contra-indicated, for she would not have borne the shock; and again, the os was undilatable, but this last state might have been remedied by plugging the vagina, and waiting; in all cases of plugging, however, some blood must necessarily be lost before the plug acts, and in her case the loss of a few ounces more

would certainly have placed her in a very precarious state. I, therefore, introduced two fingers into the uterus, and carefully separated the placenta throughout its whole extent, leaving the membranes unruptured. The centre of the placenta did not correspond th the centre of the os,—the head presented. Two scruples of ergot of rye infused in hot brandy and water were next given, and after waiting a quarter of an hour for the action of the drug, I, with some difficulty, managed with the point of a lead pencil to perforate the membranes just beyond the anterior margin of the placenta, making only a small opening, so that the escape of the liquor amnii might be gradual, and the disturbance of the balance of circulation avoided. The ergot soon after acted, and the uterus contracting, slowly expelled the liquor amnii, and firmly embraced the child.

The ergot did not give rise to any distinct pains, but produced a state of tonic contraction. Some hot milk, in which two eggs had been beaten up, and mixed with brandy, was then given. Mr. Lakin shortly after arrived: she had by this time slightly rallied; her pulse was small, frequent, and intermitting; her extremities still cold; her breathing easier.

We now determined to give her another dose of ergot; this time its action failed altogether, it produced neither pains nor contractions; indeed I think it rather prostrated the system more, for shortly afterwards she fell into a state similar to that in which I first saw her, in which the collapse seemed even to threaten death. At times she was so much exhausted that I thought, in spite of all my caution, some portion of the placenta must still remain attached, and that internal hemorrhage was going on.

The os was now more dilatable and dilated, and I endeavoured to pass my hand into the uterus and remove the placenta, but there was considerable tonicity of the uterus, and the head of the child was firmly pressing against the placenta, so that it could not be removed without the employment of considerable force. A portion of the anterior margin, however, was brought down into the vagina,—it was very friable.

On consultation, we determined not to remove the placenta, for it was doubtful whether she could even bear the force we must necessarily use, now that the liquor amnii had escaped, and the uterus had contracted. We, therefore, resolved to wait for the pains.

She began soon afterwards to wander in her mind, and became very restless, throwing her arms about, and sighing, and whenever we spoke to her or touched her, she begged us to leave her alone and let her die quietly. She continued in this state until five o'clock, when Mr. Lakin, having been obliged to return home, on his way back met Dr. Heslop, and mentioned the case to him, speaking of the exhausted state of the woman. Dr. Heslop recommended galvanism. I must confess I was at first somewhat sceptical as to its influence, for I thought that Dr. Simpson in his six cases had fully proved the inefficacy of this agent. I went home, nevertheless, for the apparatus:—that which we use at the dispensary is one of Gore's large electro-galvanic machines, containing twelve cells. While we were preparing the apparatus the patient vomited

several times; we only used six of the cells; one of the conductors was placed up the vagina in contact with the anterior margin of the womb, the point of the other externally over the fundus. Now that the galvanic circle was complete, she complained that we were cutting her, and running things into her. After we had applied it for ten minutes it was extraordinary to see how her system rallied, her face lost its corpse-like aspect, her eyes brightened, her mind no longer wandered, her pulse was plainly perceptible at the wrist; but its effect upon the uterus was still more remarkable; the hand placed on the fundus felt the womb rise and contract until it became hard as a board; and when the galvanic circle was broken by removing the conductor from the fundus the uterus was left firmly contracted.

After continuing the galvanism for half an hour her nervous energy was so much rallied that we thought the ergot might now be serviceable; we, therefore, administered some mixed with a little brandy, but it did not remain long on her stomach, for in less than ten minutes she vomited it up. We continued the galvanism for two hours, when the pains came on spontaneously; by this time the uterus had descended much lower, more of the placenta passed into the vagina; one piece, the size of a walnut, was broken off by the pains and came away. The head of the child was felt endeavouring to ride over the anterior margin of the placenta, and the uterus was dilated to the size of the bottom of a wine glass.

We left her now, directing that we should be sent for when the pains became more urgent, or should the flooding recommence.

In an hour and a half we were sent for,—we found the child's head in the hollow of the sacrum, beginning to press against the perineum; the pains were strong, and in a quarter of an hour she was delivered. The child had a strong corpse-like odour, which leads me to conclude that it had been dead previously to the separation of the placenta. Its face, lips, and surface generally, were blanched and colourless; the placenta immediately followed the expulsion of the child,—it had been pressed into the hollow of the sacrum, and ridden over by the head during the passage of the child. No clots followed, proving that there had been no internal hemorrhage, as I at one time feared. The uterus was felt in the abdomen firmly contracted. She was bandaged up tightly, and a dry doubled sheet was placed underneath her. In a fortnight afterwards, she was still in a very anemic state, but was gradually improving.

This case proves,—first, that, contrary to the usually received dogma, rigidity of the os uteri is compatible with extreme exhaustion of the patient.

Secondly, that the placenta can be completely seperated from the parietes of the uterus by means of the finger when the os is undilatable and rigid. The proofs that the placenta was actually detached are three: 1st, The fact that the considerable oozing going on previously ceased immediately upon the separation of the placenta; 2nd, If the placenta had not been completely detached, internal hemorrhage must have occurred after the rupture of the membranes, for we can hardly imagine that at the eighth month of pregnancy a child's head could be so large as perfectly to compress a placenta seven or eight inches long, and that placenta separated to a very great extent. That there was no internal hemor-

rhage is proved by the fact of no clot escaping upon the removal of the placenta, or the birth of the child. The third proof is, that after separating, I carefully felt the margin of the placenta all round, so that not the smallest part could be attached.

Thirdly, that galvanism is an ecbolic agent, and also a stimulant to the nervous system generally. That it is an ecbolic agent is shown fairly by the manner in which it stimulated the womb to contraction, and eventually brought on spontaneous pains. It had a decided influence, for each time the galvanic circle was complete the uterus contracted until it became as hard as a board, and when the circle was broken the womb subsided into a state of firm contraction, the active and intense state of contractibility being again brought on by the re-application of the galvanic current.

Fourthly, this case proves also the correctness of the statement of Dr. Radford, when he declares "that galvanism not only originates the temporary contractions of the uterus, but also produces such a lasting impression on the organ that pains continue to occur until the labour is terminated." That it is a stimulant to the nervous and arterial systems is shown by the brightening of the eye, the delirium of exhaustion ceasing, and the radial pulse becoming perceptible. Hence I think we may infer that galvanism is an important agent in all cases in which powerful contractions of the uterus are required, and that it is useful in hemorrhage both before and after labour, especially when combined with a funis presentation, it succeeds when the ergot fails, and when the uterus refuses to respond to the rupture of the membranes, friction of the abdomen, and the irritation of the vagina and cervix with the finger. I think also, with Mr. Houghton, that it will in many cases obviate the necessity of applying the forceps.

Fifthly, it may be remarked, as regards the apparent inactivity of the treatment, that as my patient was so much exhausted, I ought cautiously and carefully to have dilated the os uteri, and have performed the operation of version. But here, two circumstances forbad that plan of treatment, either of which taken separately is important, but when they occur together, show that the do-nothing plan I adopted was in this case judicious. The first circumstance is the rigidity and undilatability of the os. Now, we know, that in placenta prævia the cervix uteri plays the part of the fundus, and its vessels become enormously increased in size. Supposing that I had forcibly dilated the part, and turned and brought down the feet of the child, is it not probable that the irregular parts of the fœtus, the knees, nates, &c., must have lacerated and contused a part, unprepared and undilatable? It is true that for a time the limb or body of the child may serve as a plug and restrain hemorrhage, but this does not hold good after the birth of a child, when the hemorrhage may and perhaps would have occurred,—and if so, in the exhausted state of my patient, it must necessarily have proved fatal to her. In the second case of placenta prævia I ever attended, I turned and delivered before the os was, as I now consider, sufficiently dilated. In half an hour afterwards I was sent for; blood was flowing profusely, although the womb felt firm and contracted in the abdomen. I had some difficulty in restraining the hemorrhage, and thought my patient would have died.

In another case the patient was attacked three or four days after with irritative fever, if not actually phlebitis, produced, I think, by the contusion of the os. Dr. Lee, in his twenty-third case of placenta prævia, says: "The effect produced by the hemorrhage was so great that it was evident death would soon take place if the delivery were not speedily completed, and the state of the orifice was such, that it was certain the hand could not be passed but with the greatest difficulty. I passed the right hand into the vagina, and insinuated my fingers between the uterus and placenta at the back part, and reached the membranes. But the rigidity of the orifice was so great, that, though I employed great force for a considerable time, I could not succeed in getting the hand into the uterus. Dr. Merriman, who was with me, recommended rupturing the the membranes, and I was proceeding to do so with the fingers, when I felt one of the feet of the child, which I grasped and brought down into the vagina, enveloped in the membranes, which gave way. Nearly half an hour elapsed before the version could be completed, and when it was effected, the neck of the uterus grasped the neck of the child so firmly that I experienced the greatest difficulty in extracting the head, and not till I had made pressure for some time with the finger, and dilated the orifice of the uterus. A great discharge of blood instantly followed, the placenta was removed, and every means employed to stop the hemorrhage, but the breathing became hurried, the extremities cold, and she died in less than an hour after delivery." Reverting to my own case, the second circumstance was the extreme exhaustion of the woman. To turn when the patient is in a state of extreme exhaustion is now, I believe, generally deemed inadmissible. Dr. Murphy in his lectures says: "In a case of extreme exhaustion do not attempt to turn the child; rather separate the placenta, and leave the child undisturbed until some decided re-action takes place;" and in another place:—"If you were at once to turn the child and deliver, the fate of the patient would be sealed." Giffard, Smellie, and the late Dr. Rigby, relate four cases in which women, when extremely prostrated, have died from the shock of turning.—*Dublin Quarterly Journal, August* 1853, *p.* 240.

129.—*On a New Method of Inducing Premature Delivery.* By Scanzoni.—The author was induced, by observing the active sympathy between the breasts and the other parts of the sexual apparatus, to try to produce premature delivery by irritating the nerves of the mammary glands. The first experiment was made upon a young woman, aged 24, who, two years ago, had been delivered by perforation, in consequence of contraction of the pelvis. In the thirty-second week of utero gestation, apparatus constructed of caoutchouc, forming sucking-pumps, were put upon the nipples. During three days they were used about seven times, the process going on upon each occasion for two hours. After the third application, the neck of the uterus became shortened; after the sixth, severe labour pains came on; after the seventh the child was born.

The only danger likely to ensue from this very simple method of treatment is inflammation of the mammæ; this can be met with proper treatment.

A second case, of a similar kind, occurred to the author. A young woman, *enceinte* for the first time, suffered so severely from dyspnœa, connected with organic disease of the chest, that premature delivery was necessary for the preservation of her life. After the third application of the sucking-pumps, an apparently dead child was born; respiration, however, was soon re-established. The author remarks, that this case is not quite conclusive, because premature delivery occurs often in connexion with severe dyspnœa, independent of other influences.—*Ges. zu Würtzburg.*

130.—A CASE OF TRIPLETS.

By R. C. Shettle, Esq.

[We may notice in this case, first the extreme exhaustion of the patient at an early period, without any apparent cause; and secondly, the absence of hemorrhage. Mr. Shettle says:]

At four o'clock in the morning of the 30th July last I was summoned to attend Mrs. C., aged twenty-four, who was in labour with her first child. On reaching the house the nurse informed me that Mrs. C. had been in slight pain during the whole of the preceding day, but that labour pains had not come on until three o'clock, when they sent for me.

Upon making an examination, I found the os uteri about one-third dilated, the vertex presenting, and the membranes (during pain) protruding slightly through the os. The pains, which had not been severe or long continued, now gradually increased in severity, and came on about every ten minutes; indeed all seemed progressing favourably, and I fancied labour would terminate in three or four hours. About six o'clock the membranes (which were quite thin) ruptured; the os uteri becoming fully dilated by eight o'clock, the head pressed down upon the perineum, in which there was an absence of all rigidity. Labour pains after this time began to flag, and my patient exhibited other signs of exhaustion; the pulse becoming quick and irritable; the tongue dry, brown, and coated. Although it was a first labour, there being an absence of all rigidity in the external parts, I administered a dose of the volatile tincture of secale in a little brandy-and-water, in the hope that labour pains might be again brought on, but without effect. By one o'clock the pains had entirely ceased, and she became very irritable, with pulse 120. I therefore considered it proper to have recourse to the forceps, with which I delivered her of a girl at twenty minutes past one P.M. Finding the uterus contained a second child, I once more administered stimulants, in the hope of inducing natural labour pains, especially as the womb had been partially emptied of its contents; but I was again doomed to be disappointed. After waiting an hour, I introduced my hand, ruptured the second bag of membranes, and brought down the feet of the child, which I delivered immediately. Finding yet another, I again introduced my hand; but as the head was the most dependent, I had to turn, which was soon effected, and the child delivered with but little suffering to the mother. A bandage had been

applied round the abdomen before the birth of the first child, and had been tightened when necessary; but during the delivery of the three infants (girls) there had been no pain, and consequently no contraction of the womb. The after-births (three united) were not thrown off by the natural process from the surface of the uterus, and I considered it would be better to remove them at once than to delay doing so, as she would then have to be disturbed again for the purpose of introducing my hand for the third time. I separated the placentæ with the nails, and by grasping the womb externally with the other hand, induced contraction of that organ, and brought them away, without any hemorrhage, by three o'clock. I immediately gave a stimulant, and made the bandage round the abdomen as tight as possible. The uterus contracted firmly, and showed no disposition to re-dilate. I then ordered that she should be kept as quite as possible, hoping she would get some refreshing sleep, while I retired to an adjoining room, desiring to be summoned should any untoward symptom present itself. After the lapse of an hour I was informed that she was not quite so well, and had not obtained any sleep. I found her very restless, complaining of dimness of sight, and she had lost the use of one side. I administered brandy, ether, and ammonia at intervals, and at six o'clock she appeared more rational and quiet, dozing occasionally until after eight o'clock, when she awoke with jactitation and all the signs of approaching death, and expired six hours after the termination of labour, entirely, to all appearance, from nervous exhaustion. The children are living and at this time doing well.—*Lancet, Oct.* 1, 1853, *p.* 316.

131.—CASE OF TURNING INSTEAD OF CRANIOTOMY, IN A CONTRACTED PELVIS.

By John Traill, Esq., Arbroath.

[The patient, in this case, Mrs. R., was first confined in May, 1836. After two days' tedious labour, during which tartar emetic and bloodletting were employed, violent convulsions came on, and the child was delivered with the forceps. Her recovery was protracted. In 1838, she was again delivered by the forceps; violent convulsion having again supervened. The recovery in this case was so extremely slow, and the health so seriously affected, that Mr. Traill determined in case of future pregnancy, to recommend the induction of premature labour. He proceeds:]

Some months ago, Mrs. R., in her forty-third year, informed me that she was again pregnant, and that she expected to be confined about the end of May.

Having carefully studied Professor Simpson's papers on 'Turning as a substitute for Craniotomy,' and believing it to be a favourable and proper case for the plan proposed, I decided on allowing labour to go on to the full time.

May 19. This morning I was called to Mrs. R., and was greatly annoyed to find her in a most unfavourable state. The membranes had given way six days previously, and the *liquor amnii* had since been con-

stantly dribbling off; moreover, she had had smart labour-pains for thirty-six hours, and was in a complete state of mental prostration and hopelessness as to the result, both to herself and the infant—so much so, that the child's dead clothes were provided, and she protested against my being sent for, declaring that she had no chance of being delivered for days to come. On examination, I found the head firmly impacted at the brim of the pelvis, but only a small part within reach of the finger elongated, and the scalp swollen; the *os uteri*, about the size of a crown piece, not acted upon by the pains but quite dilatable; the contraction at the brim of the pelvis was greater than I had calculated on—the sacro-pubic diameter did not appear to me to exceed three inches.

Having decided on still attempting to turn, I gave chloroform to the full extent, and then with some difficulty succeeded in pushing up the head and passing the hand into the uterus. I found the *liquor amnii* almost entirely evacuated, and the uterus closely enfolding the infant; the pulsation in the cord was weak; and while searching for a foot, the child had repeated convulsive movements. This induced me to hurry the operation as much as possible, but I found considerable difficulty in bringing the head through the brim, so that fully half an hour elapsed before delivery could be completed. The child, a male rather under the average size, was quite still for several minutes, but ultimately recovered.

When the mother awoke from her sleep and heard the cries of her infant, she would not be convinced but that we were deceiving her, both as to her own delivery and as to the possibility of having given birth to a living child. She has made a rapid and excellent recovery without one untoward symptom, and now, in better health than she has enjoyed for eighteen years, is suckling her child, a strong healthy boy.

The gratifying result of this case has very strongly impressed on my mind the soundness of the principles on which Professor Simpson has advocated his proposals as to the practice of turning in contracted pelvis, and has led me to believe that the facility afforded to the advance of the head through the brim of the pelvis in consequence of its changed position, and of the traction which we are enabled to exert through the extruded body of the child, is much greater than could at first view be considered possible.

If I had been aware of the degree of contraction existing, I do not think I would have ventured to have allowed labour to go on to the full period. The head was of average size, or very nearly so;—the sacro-pubic diameter, I am certain, did not exceed three inches (I believe it to have been considerably less); but be that as it may, I found the head firmly wedged, and yet only just entered within the brim, after thirty-six hours of continued smart uterine action, whilst the state of the child's circulation and nervous system, as ascertained by the hand *in utero*, showing that *its* life could not have been much longer protracted.

I cannot therefore doubt, that by the practice pursued, the life of the child was saved; nor do I think that the benefits resulting to the mother can be considered less important.

From the degree of deformity of the pelvis, the firm impaction of the head, and its non-advancement—notwithstanding the prolonged uterine action—I do not believe that delivery by the long forceps would have

been possible. I believe that craniotomy must ultimately have been resorted to; followed as in the two previous labours—which occurred under circumstances in every way more favourable—by *at best* a tedious, protracted, and imperfect recovery.—*Monthly Journal of Med. Science, August*, 1853, *p.* 182.

132.—*Puerperal Convulsions in a Primipara delivered of Twins; Advantages of Chloroform in such cases.* By Henry Rudge, Esq.—[The advantages of this invaluable agent will be exemplified in the following case:—Mrs. E. M., aged twenty-three, began in labour at eleven o'clock, p.m., on the 25th of July. Labour progressed slowly. Previous to the arrival of Mr. Rudge's assistant, Mr. Boyce, she had two or three convulsions. At half-past five, a.m., after falling asleep, very violent convulsions occurred. At nine, p.m., they recurred with greater violence. Mr. Rudge soon after arrived. He says,]

On examination, I found the os uteri dilated, and the head presenting. The pains were entirely arrested; and the patient was in strong convulsions; attended with considerable hemorrhage. Under these circumstances, I quickly procured some chloroform, twenty drops of which were administered at intervals, by means of a folded cambric handkerchief, by my assistant. The effects were magical. The convulsions, after a few inhalations, entirely ceased; and I proceeded to extract the child, which was effected without difficulty. On examination, I found it was a twin case (both females); and a second head presenting, I ruptured the membranes, and extracted the second child without difficulty, with the forceps; and, in consequence of smart hemorrhage, after a few minutes, I introduced my hand, and carefully extracted the placenta. Leeches and cold applications were applied to the head. After delivery she had, at 3 p.m., one attack of convulsions. She passed a good night; the bowels having been well cleared out. No unpleasant symptom has arisen up to this date.

Mrs. E. M. was not conscious of her delivery; and was much surprised when informed that she had given birth to twins. Both infants are well, and likely to live. I have no hesitation in attributing the favourable issue of this case to the use of chloroform; and I firmly believe that, in skilful hands, it will prove an inestimable boon to the fairest portion of the creation, relieving them from much of the danger and dreadful suffering of tedious and complicated labours—sufferings, the witnessing of which frequently unnerves the strongest of the other sex.—*Association Med. Journal, Aug.* 12, 1853, *p.* 706.

133.—CASE OF INVERSION OF THE UTERUS AFTER PARTURITION, PROVING FATAL IN EIGHTEEN MONTHS.

By John Gregory Forbes, Esq.

[Mrs. A. B., aged 25, was confined of her first child on the 23rd April 1850. Her health had been previously good, but from the consequences of her labour she came to town to consult Dr. Lee, in Decem

ber of the same year. It was there Mr. Forbes saw the case. He describes it as one presenting all the symptoms of intense anæmia at an advanced stage. Since her confinement she had suffered from a bearing down and profuse hemorrhage, having had five attacks of the latter since July.]

On the 4th of December Dr. Lee made a digital examination, and detected a tumour projecting through the os uteri into the vagina for upwards of two inches. It was of a somewhat pyramidal shape, and its base, measuring in its transverse diameter about an inch and a half, was embraced, though not constricted, by the os, and seemed to be so intimately connected with it at all points of its circumference, that no neck could be traced. Its surface was perfectly smooth, and its consistence rather softer than that of the common uterine polypus. Some trifling hemorrhage followed the examination. Dr. Lee expressed his conviction that the case was one of inverted uterus, and advised strict rest in the recumbent posture till after the next catamenial period, then near at hand, with the employment of cold lotions and ice, if necessary, to restrain the hemorrhage. The result of this examination led to a communication with Dr. Prothero, the lady's medical attendant in the country, who kindly transmitted to me the following particulars of her labour, and the history of the case while under his care:—The labour proceeded well under natural presentation for fourteen hours, when the pains nearly left her. The os uteri being fully dilated and yielding, a dose of ergot was given and repeated in an hour. This had its full effect, and in about two hours the head had descended into the pelvis; but the case now became complicated by a loop of the funis slipping down in advance of it. With the view of saving the life of the child, the forceps, as soon as they could be procured, were applied, but though the delivery was easily effected, it was dead. The placenta was expelled in a few minutes, no traction being necessary, and the uterus contracted well. The funis was of natural length. After the lapse of an hour some hemorrhage took place, and the patient became very faint; but a medical gentleman then in charge of her stated, that before he left her, all bleeding had ceased, that the uterus was firmly contracted, and that everything was right. She passed a comfortable night, and for the next three days all went on satisfactorily. The bowels were moved on the third day by medicine; but a few days afterwards Mrs. A. B. stated that the action was attended with much straining and pain, and that she felt as if something had come down with the motion, but that it gave her no great inconvenience. On vaginal examination, it was now discovered that the uterus was inverted, the fundus having descended to within an inch or two of the labia; but no unusual discharge or hemorrhage had taken place since the day of delivery. An attempt was at once made to reduce it with as much force as was considered justifiable, which unfortunately proved ineffectual; and on the following morning a consultation was held, when perfect rest and the use of astringent lotions were recommended. Up to the 8th of May (after which date an examination was not permitted for upwards of three months,) no alteration had taken place in the condition of the parts; a suspensory bandage was therefore made with a cushion to support the uterus, and in time the patient was able to take gentle carriage exercise.

A slight sanguineous discharge existed up to the 12th of July, which, though varying more or less in quantity, did not occur to any alarming extent. On this day very profuse hemorrhage took place, and produced much exhaustion, but under rest and the astringent lotions it soon subsided. In the middle of September Mrs. A. B. removed to the sea-side, and the change was attended with considerable benefit to her general health.

On the 6th December the catamenia appeared, and the discharge continued moderately for some days; but on the evening of the 12th, after a day disturbed by hysterical feelings, a serous fluid was poured out so profusely as to soak through six or seven napkins used together. On the 13th the discharge was less and of deeper colour, and several clots of blood were expelled. The bowels had been relieved by rhubarb and colocynth, but the action exhausted her much. On the 15th she suffered from feverishness and vomiting, though there was no abdominal tenderness, and in the evening had a prolonged fit of hysteria. On the 16th, after taking some blue pill and Epsom salts, a very offensive motion was passed, and during the action of the bowels she completely fainted. On the 17th the case appeared so alarming as to lead to the belief that it would be necessary to apply a ligature around the base of the tumour with the view of dividing it, which, notwithstanding the risk attending such a proceeding, seemed to be the only means of restraining the hemorrhage and of preserving the patient's life.

On the 18th, Dr. Locock saw her in consultation, and after carefully examining the tumour, fully concurred in the diagnosis previously given. The propriety of the immediate application of a ligature was discussed, but the hazardous nature of the operation being considered, and the hemorrhage being now restrained by the aid of a sponge soaked in a strong solution of alum, it was resolved to defer it. In the mean time the plan of treatment agreed upon was to surround the tumour with strips of lint dipped in the solution of alum, to support the system with nourishing diet, and to give one of the mineral acids as a tonic.

On the following day there was some improvement, a tranquil night had been passed, the bowels had been moved by Epsom salts, and there was neither faintness nor hemorrhage. The same treatment was continued till the 26th, when, as there was only a slight mucous discharge, the lint was not as usual replaced. The patient was on the sofa in the drawing room for several hours in the afternoon, and had taken throughout the day more nourishment.

During the frequent examinations which were necessarily resorted to, pressure was made upon the tumour with the hope, if possible, of reinverting the uterus; but it invariably produced such severe cutting pain in the abdomen above the pubes, that a more systematic and longer-continued attempt to effect this was precluded. The tumour itself possessed but little sensibility.

On the 1st of January, 1851, some citrate of iron in small doses was administered, but the stomach rejected it.

From this time up to the 19th, the patient, still strictly confined to the horizontal posture, gained strength. The appetite improved, and the bowels were freed at intervals by Epsom salts. On this day the

catamenial period again commenced; and on the 21st the profuse serosanguineous discharge recurred, and with it the rapid, feeble pulse, whizzing sensations in the head, and other distressing symptoms. In the evening, during the action of the bowels, several florid clots of blood were expelled from the vagina. A mixture composed of the infusion of cusparia, tincture of catechu, and laudanum was prescribed. On the 23rd, the discharge was still more copious, and in the evening the pulse ran up to 120, with an irritable beat, the patient became hysterical, and vomited some undigested food. The tumour was, therefore, closely enveloped as before with the lint and alum, care being taken, whenever it was removed, to syringe the parts with tepid water, to bring away any clots which, at times, became very offensive. The two succeeding monthly periods, which commenced respectively on the 21st Feb. and the 29th March, were attended with precisely the same symptoms, and the same plan of treatment was adopted. During the intervals the patient rallied surprisingly, and, though suffering much at times from flatulence, intestinal pains, constipation, occasional vomiting, and other symptoms of feeble digestive power, upon the whole she gained strength, and was able to take gentle exercise in an easy carriage or an invalid chair.

On the 16th of April she was well enough to be removed to a distance of upwards of a hundred miles into the country; and though I had no opportunity of seeing her again, I received from time to time very distinct reports of her state. The catamenia returned early in May, and continued longer than usual, for I was informed, in a letter dated the 20th, that at times the discharge was still very copious, with a good deal of colour.

The succeeding period which commenced early in July appears to have been attended with a more severe train of symptoms than any she had before experienced. The loss of blood was most profuse for some days, and then subsided, leaving a very trifling discharge of serous fluid of most offensive odour. This continued for about a week, during which time the stomach rejected everything, and the pain in the head was so intense as almost, it was said, to deprive her of her senses. The state of weakness to which she was now reduced was such that it was thought she would scarcely recover; she did, however, rally, and, to my surprise, in a letter dated Oct. 13th, I received much more cheering reports. It was stated that the patient had been improving in all respects, that the last three catamenial periods had been passed over naturally, without any hemorrhage or other untoward symptoms, and that sanguine hopes were now entertained by her relatives that she might ultimately be restored to health. The next report, however, showed that these hopes were not to be realised.

The catamenia again commenced on the 2nd of November, and progressed favourably, and during the following week she suffered much from constipation and headache. The former was relieved by medicine, yet the latter increased, and on the 8th and 9th became very severe. The night of the 9th was passed quietly, but in the morning Mrs. A. B. was found in a state of unconsciousness, with labouring respiration, and an erysipelatous redness on one side of the head and neck. From this

comatose state she never recovered, but sank, and expired on the night of the 10th of November.

The post-mortem examination was conducted by Dr. Prothero, but, not having been made until a week after death, the uterus and appendages were the only parts examined.

The uterus was in a state of partial inversion. The fallopian tubes and round ligaments were drawn inwards and downwards with the fundus, which protruded through the os, forming an oblong, rounded tumour, whose length was three quarters of an inch, its transverse diameter one inch and a half, and its circumference, at the widest part, which was close to the os, about four inches and a quarter. The mucous membrane, which covered it, was smooth, and of a deep purple colour. The anterior lip of the os uteri was thin and narrow, and rested upon the tumour without constricting it, the posterior was flattened and not easily recognised.

Some few fibres of lymph were found between the adjacent surfaces of the peritoneum covering the depressed fundus.

The left ovary was enlarged to the size of a hen's egg, and contained a cyst as large as a walnut, which enclosed a sanguineous fluid. It was found to be quite impossible, with all the force that could be used, the vagina being dragged down at the same time, to re-invert the uterus.

[The above is another melancholy instance of the fearful effects of inversion of the uterus after labour; and the case is a remarkable one, inasmuch as the constitution bore up for so long a period as eighteen months against the great drain which it had to support.]

In a few cases on record, the uterus from some cause underwent spontaneous re-inversion, and in others, the patient was relieved of the source of her danger by sloughing of the tumour resulting from inflammatory action or constriction by the os; but these are rare and happy exceptions, and can scarcely be taken into account in estimating the value of the operation.

With regard to the possibility of reducing the inverted organ, it may be admitted on the testimony of the most competent observers, that unless this desirable end can be effected within a few hours after the accident has occurred, there is little or no hope of its being afterwards accomplished. Even with the aid of instruments carefully constructed and perseveringly employed, the attempt failed in a case of two months and a half standing, under the care of Dr. Bouchet, of Lyons. In Mrs. A. B.'s case, the pressure on the tumour gave rise to such pain in the abdomen that it could not be borne. A few instances, however, are recorded in which reduction was effected at later periods. but from their rarity they cannot be considered as affecting the general rule, nor can parallel results be anticipated in other cases.

The duration of life under inversion of the uterus, when it has reached the advanced stage, varies considerably, much necessarily depending upon the original constitution of the patient, and her ability to rally during the intervals of the monthly discharges. During the time of lactation the danger is of course lessened, and if the accident occurs at a comparatively late period of life, the tendency to hemorrhage

is diminished by the natural cessation of the catamenia. The latter fact is well illustrated by a case mentioned by Lisfranc, who found this displacement in a woman seventy years of age, to whom, he states, it gave no inconvenience. It was not discovered until after her death, which was caused by pneumonia. She suffered neither from hemorrhage, leucorrhœa, uterine pains, nor difficulty in walking.

Mr. Crosse gives references to some cases which had been traced to their termination, though many others of which he speaks were lost sight of. It appears that of twelve cases—

1	proved fatal at	8	months.
3	,,	9	,,
1	,,	12	,,
2	,,	22	,,
1	,,	2	years.
1	,,	3	,,
2	,,	4	,,
1	,,	5	,,

To these may be added Dr. West's case, in which the patient survived twenty-nine, and that of Mrs. A. B., who lived eighteen, months. Dr. King also mentions the case of a lady who lived twenty years under this affection, though suffering from pain and frequent hemorrhages; and Lamotte gives a case in which the inversion had existed for thirty years.

It is worthy of notice that some have been the subjects of this accident in whom it occasioned but little or no distress, of which the following case, related by Boivin and Dugés, affords an interesting example. The patient came under the care of Dubois on the 18th of August, 1825, being the sixth day after her delivery. When first the inversion took place the hemorrhage was excessive and nearly exhausted her. The bleeding, however, had not recurred, and though completely blanched she now complained only of a sensation of weight in the pelvis, slight pains in the iliac regions, and frequent desire to pass water. The use of the catheter was for a short time required, but as the tumour, which reached to the labia on admission, diminished in size, this became unnecessary. Some whitish discharge was secreted from that portion of the uterus to which the placenta had been attached. On the eighteenth day after labour the patient travelled home by the diligence. On the 22nd of September, 1830, upwards of five years from the date of the accident, she again sought advice in consequence of the catamenia not having returned, the only appearance of them being a slight discharge of reddish mucus from the vagina occurring every fifteen or twenty days, and lasting but a few hours. The patient had grown fat, and the tumour was still found to exist.

It is unusual, however, to meet with cases of inversion of the uterus in which so few important symptoms are observed. The touching description of the younger Martin indicates with great accuracy the history of the majoriiy of them. "In the rare cases," says he, "where the woman does not perish from hemorrhage, the inverted uterus lessens in size as it hardens, and becomes extremely painful; the patient falls into a state of marasmus; her powers are gradually exhausted under the uterine discharges, which there are no means of arresting; hysterical

spasms disturb the general economy in its functions; the healthy hue of the skin fades, and a slow hectic fever terminates, sooner or later, her deplorable existence." With such a prospect in view, it becomes a matter of great moment in each case to decide whether any operation shall be performed in order to avert, if possible, the impending calamity. There are few, probably, who do not shrink, unless it should be imperatively demanded, from any active surgical interference with an organ of such delicate structure as the uterus, containing within it so large a supply of vascular and nervous tissues; or with a membrane like the peritoneum, so prone under these circumstances to take on fatal inflammatory action. Experience, however, has proved that in these cases a portion or the whole of the uterus may be removed with the result of arresting the hemorrhage, rallying the failing powers, and restoring the patient to health. On the other hand, it must not be lost sight of, that in some cases, owing to the severity of the symptoms induced by the operation, its completion could not be effected, and in others it has itself been attended with fatal consequences.

The modes which have been adopted for extirpating the bleeding portion of the uterus are simple excision with a bistoury, excision after the application of a ligature, and gradual strangulation by a ligature only.

The first of these plans was resorted to on one occasion by M. Velpeau, and though the subject of it survived all its dangers and ultimately recovered, the jeopardy in which she was placed was so great, that it will doubtless not be often repeated. The patient had suffered from inversion for three years. The tumour was excised, and the finger entered the peritoneal cavity, and felt the intestines. Though but little hemorrhage occurred, the acute pain, cramps, restlessness, and syncope, which followed and continued for three days, very nearly deprived her of her life. The uterus was removed, with the exception of a small portion of its neck.

The same surgeon afterwards performed the operation of extirpation twice by applying a ligature and then excising the tumour. In both cases it proved fatal. The first was that of Albertine Holbe, of which he gives very full details in his 'Clinique Chirurgicale.' The ligature was not tied tightly, and some hemorrhage followed the excision. The patient died in three days, and post-mortem examination revealed traces of peritoneal inflammation and extravasation of six or eight ounces of blood into the pelvic cavity. M. Velpeau attributed her death to the excessive loss of blood she had sustained. The other case was that of Josephine Roussin. Two strong threads were passed through the neck of the tumour, for the purpose of restraining any hemorrhage that might occur, but were not tied. The fundus of the uterus and part of its body were then removed, and the vagina was plugged. The patient died two days afterwards from peritonitis.

The simple application of a ligature around the neck of the tumour in order to destroy its vitality, appears to possess more advantages than the other modes of operating. The constriction may, in the first instance, be moderate, so as to excite sufficient inflammation to unite the adjacent surfaces of the peritoneum lining the inverted organ, without inducing

severe pain and nervous symptoms; and if these should arise, the ligature may be loosened, which usually has the effect of arresting them. Whether the constriction can be more gradually applied and more steadily maintained by a flexible wire than by an ordinary silk or thread ligature, is a matter to be decided by practical observation. In four out of his five successful cases, Dr. Johnson used a ligature made of fine well-annealed silver wire and silk twisted together.—*Medico-Chirurgical Transactions*, 1852, *p.* 135.

134.—GALACTAGOGUE AND EMMENAGOGUE EFFECTS OF WARM AND STIMULATING APPLICATIONS TO THE MAMMÆ.

By Dr. John Rose Cormack.

[In preceding volumes we have inserted papers by Dr. M'William on the value of fomentations, with the leaves of the Ricinus communis and Jatropha curcas, as used in the Cape de Verd Islands, for producing a secretion of milk. Dr. Tyler Smith by a similar method produced a similar effect, even in the colder climate of London. Dr. Cormack believes that the warm fomentations were the chief cause of the excitement produced in the mammary gland, and that stimulating embrocations and cataplasms possess this power in a still higher degree. He says,]

My object at present is to establish, by the brief narration of a few facts, the following propositions:—

1st. Warmth and stimulants applied to the mammæ often act powerfully as *galactagogues.*

2nd. Warmth and stimulants applied to the mammæ often act powerfully as *emmenagogues.*

3rd. The leaves of the bofareira (or the ricinus communis) and jatropha curcas act as galactagogues and emmenagogues; but not from their possessing any peculiar or specific power.

I. *Warmth and stimulants applied to the mammæ often act powerfully as galactagogues.—Case* 1. *Milk restored to the mammæ by hot fomentations.*—Last month, a lady, when nursing her infant, about seven months old, was attacked with acute bronchitis of moderate severity, which was successfully treated by low diet, and tartar emetic in small doses. At the end of four days, the bronchitis was cured; but the milk which had previously been failing, almost entirely left the breasts. On the fifth day, from exposure to cold, she experienced a relapse of the bronchial affection. As she had been considerably weakened by the previous attack, and as the symptoms of the relapse were not sufficiently severe to justify recourse a second time to antimony, I ordered her to take a draught containing ammonia and chloroform, as an anodyne, expectorant, and diaphoretic, every eight hours; and to carry out similar intentions, I also directed a succession of pillow-cases, filled with heated moist bran, to be applied to the chest. When I saw her on the following day, after this treatment had been employed, she told me that she had profusely perspired for some hours; she was (after copious expectora-

tion) free from cough and pain in the chest; and, what was equally a source of pleasure and surprise to her, *her breasts had become distended with milk.* This lady was able to resume nursing, and to continue it with the assistance of a suitable diet.

Case 2. *Hot Poultices keeping up the Secretion of Milk when this was not desired.*—A lady suffered, after her confinement, from a succession of abscesses and abortive abscesses, in the breast. The surgeon who attended her treated her by antiphlogistic medicines, under which discipline she passed some wretched months, from mental and bodily depression, aggravated by hysterical attacks. The local affection did not seem to make any satisfactory progress; and the great obstacle to a cure was stated to be the impossibility of getting rid of the milk, in spite of saline purges being freely administered. The mammæ during the whole of the period to which I refer, had been ceaselessly treated, night and day, with hot poultices and medicated fomentations. These applications were abandoned, and a general diet prescribed. *In a few days there was not a drop of milk in the breasts;* and the abscesses, actual and threatening, had ceased to give any pain, and had, in fact, almost disappeared.

II. *Warmth and Stimulants applied to the Mammæ, often act powerfully as Emmenagogues.*—Warm clothing of the abdomen and limbs, hot hip-baths, and medicines which stimulate the bladder and rectum, (such as ergot, cantharides, and aloes,) have undoubted emmenagogue powers in properly selected cases of retarded or surpressed catamenia; and indeed, they constitute, in various combinations, the principal measures by which the physician usually endeavours to excite the ovarian nisus upon which menstruation depends. The observant physician knows well, that while his treatment is directed to the uterus through the ovaries, the effects produced upon the mammæ are generally very striking, and the first indications which he expects to find of the uterus being roused from its torpor are turgescence and tingling of the mammæ; phenomena which also usually precede normal menstruation. It is equally true, though not so familiarly understood, that measures which act directly and primarily upon the breasts, such as warm clothing to the bust, and the application of stimulants, not only cause them to swell and throb, but likewise stimulate the ovaries, and cause the menses to flow. The practice adopted by some practitioners, of applying leeches to the mammæ in amenorrhœa, owes its efficacy to fomentations used, and the irritation of the bites.

[Dr. Charles Patterson, in 1834, published a paper on the emmenagogue power of irritation of the mammæ by sinapisms. When at the Edinburgh dispensary, Dr. Cormack tried this plan with great success. The following is an abstract from Dr. Patterson's paper.]

"Mary Reardon, aged 24, of moderately corpulent habit, was admitted into the Rathkeale Hospital on the 10th of August, 1832. She laboured under slight synochial fever, which in a few days yielded to venesection and purgatives. On the 19th August, symptoms which were considered of a hysterical character presented themselves, with pain in the upper and outer part of the right side of the chest. For the latter affection, a small sinapism was prescribed; but from inattention of the nurse, it was made so large, that it covered a considerable portion of the

mammæ. The sinapism remained on for half an hour. At the visit on the following morning, the 20th August, Reardon complained that the right breast was exceedingly painful—the pain being very different in its character from that which she had before experienced. On examination, the whole of the chest was found considerably swollen; there was slight diffused redness of the skin; and though the mamma itself was enlarged to four or five times its natural bulk, yet there was no circumscribed hardness, nor any tendency to suppurative inflammation. On the 21st August, the right mamma and adjoining parts of the chest were found much more enlarged than they had been at the preceding visit. The left mamma and side of the thorax were unaffected; and it was announced by the nurse that the catamenia had that morning appeared, and were then in considerable quantity. This discharge, which, as the patient stated, had been for two years and a half wholly suppressed, continued to flow for two days; then it began to decline, and with it the tumefaction of the mamma gradually disappeared."

Dr. Patterson's attention having thus accidently been directed to mammary irritation as an excitant of the torpid uterus, he resolved to try its efficacy when a suitable opportunity presented itself. His next case is thus described :—

"Catharine Power, aged 19, applied to me on the 14th September, 1832. She complained of headache, languor, loss of appetite, and inability to attend to her usual business, that of a servant. She stated, that about the middle of April, the menstrual discharge being then present, she incautiously exposed herself to cold in washing clothes at a river. The catamenia then suddenly ceased, and had not since returned; and from that period she had been constantly subject to ill health. She had consulted different medical gentlemen, and taken a great variety of medicine, with little advantage. I directed that the clavicular half of the right mamma should be covered with a sinapism. It was allowed to remain on for thirty minutes; and on visiting her in six or seven hours after its removal, I found the whole right breast considerably swollen, hot, and painful. The next morning, the enlargement of the mamma was very much increased, the tumefaction having extended to the clavicle and axilla of the irritated side. There was no hard circumscribed or prominent tumour, but a painful, diffuse, elastic distension of the mammary gland, and surrounding cellular substance. On the evening of the day next succeeding the application of the sinapism, this poor girl with much joy reported that the catamenia had appeared. The flux having continued for two or three days in moderate quantity, she then found herself greatly relieved of the headache and other most distressing symptoms; and in a week her health was so far restored, that she ceased to require any further attendance."

[Dr. Cormack concludes, therefore, that the galactagogue effect is not produced by any specific property of the leaves before mentioned, but merely by the determination of blood to the gland produced by the warmt and irritating properties of the juices they contain. But, he observes,]

Injurious effects may so readily be produced by *excessive irritation of the mammæ* upon themselves, upon the ovaries and uterus, and (as a

consequence of the undue excitement of any of these organs) upon the whole system, that, in following the practice recommended in this paper, it is necessary to proceed with caution.

First, as regards the *mammæ* themselves, care must be taken not to produce too much irritation, lest troublesome inflammation be excited in them, and in the glands of the axilla;—consequences which I have seen produced in such a degree as to require, for several days, cooling lotions and general antiphlogistic measures.

In irritable subjects, or when the effects of the treatment cannot be daily ascertained, stimulating embrocations ought to be preferred to sinapisms. When sinapisms are applied every eight or twelve hours, for some days continuously—as is sometimes necessary—they ought to be compounded of two or three parts of bread to one of mustard; and a fold of soft linen ought to intervene between them and the skin. By attending to these conditions, patients will generally endure the poultice without injury for half an hour or an hour; and a greater amount of benefit will be obtained than by causing violent stimulation for a short period. It is always essential to maintain, during the intervals, great local warmth, by means of abundance of cotton wadding. If mammary irritation have been carried so far, through mistake or accident, as to necessitate recourse to refrigerating lotions and lowering treatment, it need hardly be remarked, that the object for which it was used is not likely to be accomplished.

Secondly, as regards the *ovaries* and *uterus*, the effects produced upon these organs must be attentively watched; for the very greatness of the power which irritation of the mammæ exerts over these organs, may constitute an element of danger. In endeavouring to excite menstruation, we must take care that we do not excite inflammation of the ovaries, or of the womb. When we find the patient complaining of severe pain in the loins, and suffering from general fever, we ought at once to discontinue mammary irritation, and prescribe rest in bed, abdominal fomentations, and the frequent use of the hip-bath. In cases of this description, as in ordinary attacks of dysmenorrhœa, we may often not only relieve pain, but accelerate a resolution of the inflammation, by administering opiate enemata.—*Association Med. Journal, March* 25, 1853, *p.* 254.

135.—*Dry-Cupping a Substitute for Ergot.*—The 'Charleston Medical Journal and Review' for January, 1853, quotes a paper on this subject from the 'Nashville Journal of Med. and Surg.,' of which we give an abstract.

Dr. Washington has recently discovered that dry-cupping, applied to the lowest part of the sacrum, produces dilatation of the os uteri; and, applied higher up, contraction of the uterus.

In a case, where the pains had endured fourteen hours without producing any perceptible effect, in consequence of rigidity of the os uteri, Dr. Washington applied a dry-cup as low down on the sacrum as possible, so as to cover the origin of the nerves to the os uteri. Complete

relaxation ensued; at the next pain, the head descended to the outlet; and at the second pain the patient was safely delivered; and that in less than ten minutes from the application of the cups. In tedious labour, the cup should be applied first to the lowest point of the sacrum, and if, in the course of ten or fifteen minutes, the patient is not delivered, another should be applied higher up, so as to cause the uterus to contract. *The lower one should always be on when the upper one is applied, so as to ensure relaxation* of the os uteri when the pains come on.

In retained placenta, the cups are to be applied higher up, so as to cause the uterus to contract at once, the relaxation of the os uteri being always sufficient after the fœtus has passed.

When ergot is administered, the woman is delivered by main force, without any relaxation except that produced by the most fearful pains. By dry-cupping, two or three pains are sufficient, and the amount of suffering is not more than ordinary.—*Association Med. Journal, May* 27, 1853, *p.* 469.

136.–EMPLOYMENT OF THE GALVANIC CAUTERY IN CASES OF VESICO-VAGINAL FISTULA, PROLAPSUS UTERI, AND VASCULAR GROWTH IN THE URETHRA.

Under the care of Mr. Marshall, University College Hospital.

[The great value of this cautery is, that as the parts are divided the caustic action is sufficiently powerful at the same time, to check any hemorrhage which may arise.]

It may, perhaps, be as well to premise, that this instrument consists solely of a platinum wire, heated to red or white heat by means of a galvanic battery, and that its superiority over all others intended for the same purpose consists in the circumstance, that its temperature is sustained, or, if by accident reduced, is immediately replenished, by the galvanic current, without any need to suspend the operation in order to re-heat the wire. All who have had experience in the use of the ordinary cauteries in delicate operations, will be aware of the difficulty of getting through the necessary steps, especially if the surface to be touched be large, before the iron has become too cool for use. The moisture of the part very rapidly extracts the heat from a wire which has been removed from the lamp, and the surgeon is consequently under the necessity of continually interrupting his operation to change instruments, or to renew the temperature of his original one. From this objection the wire heated by galvanism is entirely free, as it sustains or constantly renews its heat as long as it continues in contact with the battery. The wires communicating with the trough are made long and flexible, so as to permit of the terminal rods being easily moved about; and as the culminating point may either be a slender piece of wire or a coil, so wound as to present a surface of any wished-for breadth, the whole constitutes a very manageable piece of apparatus. We need hardly state, that this kind of heat does not differ in its properties, so far as is known, from that obtained by other means.

The first of the cases we have to mention was one of vesico-vaginal

fistula, which had occurred as the result of laceration and sloughing from pressure during childbirth, in a woman aged 34. She had suffered from the disease for three months before her application at the hospital, and had been rendered miserable by the almost constant incontinence of urine which it induced. In October last, we witnessed the first application of the cautery to the edges of the fistula. The patient having been placed on her back on the operating-table, Mr. Marshall introduced into the vagina a speculum, having an aperture in its upper surface through which the posterior surface of the bladder bulged. The opening which was so large as to admit three fingers easily, and had indurated borders, was thus brought well into view. Mr. Marshall applied the cautery, a coil of wire, heated to white heat, pretty freely to the whole of the exposed edge. The woman was removed to bed, and did not afterwards suffer any pain worth mentioning, or any kind of constitutional disturbance. The operation was repeated in exactly the same manner in November, at which time the aperture had diminished very considerably. It has since been done seven times, at intervals of from three to eight weeks. The diminution in size of the fistula has been progressive, and, at the present date, June 25, the patient is fulfilling all the duties of a regular nurse in the hospital, and is subject to very little of her former inconveniences. As generally occurs in these cases, great difficulty is found in getting the hole to close up entirely, and there still exists a small slit, through which the point of a common-sized penknife might be passed. Mr. Marshall informs us, that, in a case under his care in private practice, in which the same procedure has been had recourse to, he has attained a like degree of success, without, however, being able, as yet, to induce a perfect cicatrization.

On Wednesday, June 1, Mr. Marshall applied the galvanic cautery to three patients in succession. The first brought into the theatre was a young woman from whom there had been removed, last Christmas, by another surgeon, a small vascular growth, situate just within the meatus of the urethra. It had been re-produced; and, as she described the bleeding which followed the former operation as having been alarmingly profuse, (at least a quart), it was thought better to destroy it by means of the cautery, than to attempt another excision. Chloroform having been administered, the patient was laid on her back, and the parts exposed. The urethra was then dilated, and its lips held as widely separated as possible, by means of small blunt hooks. The growth, which sprang from the floor of the urethra, was thus brought well into view, and the heated wire freely applied to its whole surface, in some parts breaking up its structure. On account of its extending far back towards the bladder, Mr. Marshall encountered some difficulty in securing the application of the cautery to the most remote parts; but by further dilatation of the urethra, this was ultimately accomplished. The woman was an out-patient; and as soon as she had well recovered from the effects of the chloroform, left the hospital, and walked home. Mr. Marshall informs us, that she suffered but very little pain afterwards, and that the cicatrization was completed on the tenth day. The floor of the urethra now presents a small pale scar, about the size of a mustard seed. Mr. Marshall does not apprehend any inconvenient contrac-

tion of the parts after this operation, as he has had an opportunity of watching the behaviour of the cicatrix in four other cases, for long periods after its performance, and never witnessed any such result.

The next case was one of severe and long-continued prolapsus uteri, for the relief of which, as the vagina was very large, and its walls lax and distensible, it was proposed to make a series of eschars in the course of that passage, so as to diminish its calibre by the subsequent contraction of the cicatrices. Mr. Marshall pointed out to those present the principles involved in this method of treatment, and called attention to the superiority of the operation by means of the cautery over that by the knife, in avoiding all risk of hemorrhage, and in being very slightly painful, &c. He then exhibited a speculum of peculiar construction, (a French instrument made by M. Leur), which he had procured for the purpose, as possessing great advantages over those in common use. It consisted of two very large blades, each of which was composed of a light framework of metallic bars, and enclosed double rows of fenestræ, about an inch in length, and half an inch in breadth. The instrument was adapted only for a very full-sized vagina, and, when introduced and its blades set apart, it had the effect of widely separating the walls of the canal, and at the same time of allowing the mucous membrane to bulge inwards through the rows of apertures. This, of course, was exactly what was required for the easy application of the cautery. The patient, Emma Smith, aged 34, was a married woman, who had borne three children. Ever since her first confinement, March 1, 1850, she had suffered more or less from prolapse of the womb, and the inconvenience had been increased after each succeeding confinement, until it had latterly almost incapacitated her for going about her household duties. Chloroform having been administered, the patient placed in position, and the speculum introduced, Mr. Marshall proceeded to apply the cautery, which, on this occasion, as an extended surface was needed, consisted of a coil of wire, wound round a small bit of common tobacco pipe, to the surface of the mucous membrane, as exposed through the sets of openings in the framework of the speculum. In this manner eight eschars, all of considerable size, were made on each side of the vagina; the operation being performed very quickly, and without any kind of difficulty, as it was scarcely necessary to withdraw the instrument once before its completion. As soon as the patient had a little recovered from the effects of the chloroform, she was carried to her bed, and another woman, suffering from the same disease, in a yet more aggravated form, was next placed upon the operating table. Sarah Humphery, aged 58, the mother of five children, had been troubled with prolapsus uteri for seventeen or eighteen years. It had latterly been constantly down when in the erect posture, but passed into place without much difficulty when recumbent. The exposed mucous lining of the vagina had become greatly thickened, brawny, and in some parts hard and dry, like cuticle; in others, where it had sustained friction against the thighs, it was ulcerated. These conditions were apparent to all present when the patient was placed in position for the operation, for the protrusion was then down to the size of an infant's head. Mr. Marshall remarked, that it might, at first sight, seem advisable to take advantage of this position of the part, in order to apply the cautery; but, from his expe-

rience of a former case, in which that had been done, he was not inclined to again attempt it. The application itself was, of course, easy enough; but it was impossible to return and re-invert the protruded mass, without inflicting undue violence on the parts which had just been cauterised; the patient, in the instance alluded to, had suffered afterwards from a slight attack of peritonitis, which he (Mr. Marshall) was inclined to attribute rather to the violence thus done, than to the operation itself. The prolapsus having accordingly been reduced, exactly the same steps were gone through as in the case we have just described, with the exception, that, as the mucous and submucous tissues were much thickened, it was necessary to apply the cautery more freely, so as to allow it to act deeply.

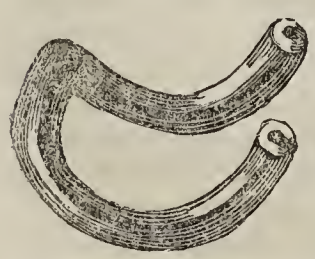
We must not omit to mention here another advantage belonging to this operation,—viz., that, through all its steps, the surgeon is enabled to see distinctly what he is about. We observed, that, when the cautery was within the vagina, the brilliant incandescence of the wire sufficed to light up all the surrounding parts, in the clearest possible manner.

The after-treatment and progress of these two patients have been almost precisely similar, and destitute of any excepting negative features of interest. During the first fortnight, they were, of course, confined to bed, and, for the first few days, the bowels were allowed to continue costive; after which, a few doses of castor oil were given at different times, and constituted the sole medication pursued. Detergent injections were at first used twice daily, and, as the sloughs separated, were replaced by mildly stimulating ones. The ulcers have now healed, and there is in each case, a very decided diminution in the capacity of the vagina. Both women have been allowed, during the last ten days, to sit up and move about the ward a little, and in neither has any prolapse yet resulted. It is intended, however, to repeat the operation very shortly on both of the patients.—*Med. Times and Gaz., July* 2, 1853, *p.* 12.

137.—TREATMENT OF DISPLACEMENTS OF THE NON-GRAVID UTERUS.

By Dr. J. F. Peebles, of Petersberg, Virginia.

[The great objection to all contrivances yet introduced to support or rectify the position of the womb is, that, as they must be worn some time, they may produce injury to some of the organs with which they are in contact. The instrument, and the only one which Dr. Peebles considers is free from this great disadvantage, is the one recommended by Professor Hodge, of Pennsylvania.]



Dr. Hodge's Pessary.

The instrument consists of two lateral bars, curved to correspond with the walls of the vagina, united at top by a rectangular bar, (see Fig.)

The instrument lying in the vagina maintains it in its original shape, and it is by doing that alone that it proves effectual in keeping the uterus *in situ*. It operates through the vagina, and rather presses away from than against the womb. It is, moreover, not liable to derangement, and

readily permits the natural functions of all the pelvic organs to be performed without obstruction, It is worn without annoyance, and can be introduced and removed with great facility. From the principle of its action, it must appear that it is calculated to replace the womb, when displaced in any way. The principle is the only true one, in my opinion, and I am in the habit of using this form of instrument in every case of displacement where mechanical support is required. In retroversion, particularly, it is an invaluable agent; with no other have I succeeded so well in the removal of the distressing symptoms attending on that form of uterine displacement.

Its mechanism in the removal of retroversion must be obvious. It will be seen that the mere introduction of the pessary alters the position of the uterus completely. The posterior wall of the vagina is kept so distended by the back part of the pessary, that instead of yielding, as before, it becomes the seat of a force which bears the fundus uteri upwards and forwards, throwing its cervix downwards in the vagina, and keeping it there. Its mere introduction, in fact, alters the position of the uterus from retroversion to that of simple prolapsus in the first degree; and it is by the distension of the posterior roof of the vagina to its normal dimensions that the organ is kept *in situ*, and not by any force exerted against it. This constitutes the great merit of the apparatus; it completely rectifies the displacement without the danger of local injury. When well adapted to the dimensions of the pelvis and vagina, it can be worn without annoyance for months or years; and such is the signal relief which patients experience from it, that I have known them to object to its removal, long after all tendency to displacement had ceased to exist.

The caution to be observed in retroversion is to secure the full extension backward of the posterior vaginal wall, so that the long diameter of the womb should be brought to look in the direction of the umbilicus. Without this, the weight of the womb, by the swaying backwards of the organ, might rest on the hindmost bar of the pessary; in which event, its pressure then would so bear up the two lateral bars, that their anterior ends would excite irritation at their terminations under the pubic arch. This is the only inconvenience in wearing the pessary, and it is to be avoided by having the fundus uteri thrown well forward, so that its weight will sway anteriorly instead of posteriorly. This objection makes it necessary in some cases to adopt measures to lessen the volume of the posterior uterine wall before applying the instrument. The reposition of the organ by the uterine sound, and a few days' rest in bed in an appropriate position, is often all that is required for this purpose. I have given complete relief in retroversion immediately by this instrument; in cases, too, in which all other measures had failed; and after a trial of most of the mechanical agents in use, including Dr. Simpson's stemmed supporter, I give it the preference, and rely upon it in my practice.

The globe pessary, highly recommended by some, in my experience aggravates the distress in retroversion; and the ring, and indeed all other forms of instruments in use, besides being less manageable, are

ineffectual. I have used Dr. Simpson's instrument in one case; it could not be borne, and from its effects, I am not inclined to make a repetition of its use in this displacement, although it appears so admirably adapted to its treatment. The great advantage in the mechanical treatment of retroversion, is to have an apparatus answering the purpose that can be easily worn, and that for a long time, without endangering local irritation, and this is the merit of Dr. Hodge's pessary.

The principle governing the mechanical treatment of anteversion is the same with that of retroversion. The same apparatus may be used for maintaining the integrity of the vagina, as it regards its length and firmness, with the addition of a front bar, uniting the anterior ends of the lateral bars, in a similar manner with the posterior ends. Such a pessary appears as a parallelogram, having its lateral bars curved in accordance with the proper shape of the vagina. The use of the front bar is to support the anterior vaginal wall, making it pull against the cervix, so as to draw the fundus upwards and forwards.

Where mechanical treatment is necessary in flexions of the uterus, I recommend the same apparatus; because the indications, at least those which can be fulfilled by such means, are the same in these deviations. By steadying the organ, local congestion, upon which most of the distress in flexion depends, is removed, its recurrence prevented, and time is given for the bend in the womb to be rectified. In the case of anteflexion, alluded to in another part of this paper, I had the most signal success with the barred pessary. The patient, from being more or less bedridden, has become a strong woman, walking without annoyance, and never suffering from her womb complaints. The dysmenorrhœa has gradually been relieved, and the thinned parietes of the cervical walls, created by the flexion, have considerably filled up. She continues to wear the instrument by preference, and in time I believe the flexion will be permanently rectified. In retroflexion, from the principle upon which the instrument operates, there is a greater reason to expect decided benefit than in anteflexion, and such has been my experience.

In prolapsus of the second and third degrees, the apparatus constitutes an effectual and convenient method, as much so as any that can be devised, for keeping the organ *in situ*. In bad cases its effects are much enhanced by proper perineal support. At the same time that it keeps the womb at its proper elevation, it allows of the free application of such measures as may be required to impart strength to the relaxed vaginal walls.

Professor Hodge has his instruments made of silver, which are afterwards gilded by heat, and it is certainly the best material on account of its lightness and durability; yet the gutta percha furnishes an excellent substitute. I have modelled pessaries from this substance which have been used on an emergency; in cases requiring great nicety of form and arrangement, I have found it best to manufacture them of this material first, and afterwards use the model in forming the metallic one.—*American Journal of Med. Science, July* 1853, *p.* 51.

138.—NEW OPERATION FOR THE CURE OF PROLAPSUS UTERI.

By M. DESGRANGES, Senior Surgeon of the Hôtel-Dieu at Lyons.

[M. Desgranges believes his operation to possess the following advantages: it neither compromises life or even the functions of the organ; nor, should it fail, does it render the disorder more severe than before. He first reviews the various operations which have been proposed to remedy this disease.]

Narrowing of the Vagina.—Cauterization. In 1823, M. R. Gérardin proposed to form contractile cicatrices, and thus to narrow the vagina, and increase the resistance of its walls. He went still further, and advised the complete obliteration of the canal. In 1833, Professor Laugier employed cauterization with acid nitrate of mercury. In 1835, M. Velpeau applied the actual cautery. The objections to cauterization are, the difficulty, especially with the actual cautery, of limiting the extent of the part acted on; and the danger of injuring neighbouring organs, which renders it necessary to cauterise superficially, and hence often insufficiently. Success, however, may be expected from cauterization in a few cases; but it requires to be carried further than prudence allows.

Excision. Drs. Heming and Marshall Hall propose the removal of an eliptical piece from the anterior wall of the vagina; the edges being immediately united by suture. Mr. Ireland recommends the removal of a quadrilateral flap on each side. M. Velpeau prefers removing pieces both before and behind, so as to treat the rectocele and cystocele, which he observes to habitually accompany prolapsus uteri. In the few cases in which excision has been practised, the prolapsus has returned in a few months. The tediousness and difficulty of this operation, its liability to injure the bladder or rectum, and the chance of purulent infection, are objections to its performance.

Suture. M. Bellini, an Italian surgeon, proposes to include a fold of the vagina in a suture, so as to produce sloughing. But the fold may be too deep; hemorrhage may be produced; or the long presence of the sloughs may irritate the organs, and expose the patient to the risk of purulent infection.

Narrowing of the Vulva.—Dieffenbach excised a series of longitudinal folds round the orifice of the vagina. But this only converts complete into partial prolapsus; and this would be a great point gained, if the patients were freed from the pain produced by the displaced uterus at the same time as from the projecting tumour. The merit of the operation is, however, doubtful. M. Malgaigne believed that the excision of the anterior or the posterior semicircumference of the vagina would be of more advantage than other methods; but the only case on which he operated in this way was unsuccessful.

Fricke of Hamburgh proposed to unite the walls of the vulva. He pared the internal faces of the labia majora, and united them by suture, as in perineoraphy. Care must be taken to have an aperture behind for the passage of fluids, and one in front for the performance of the generative functions. The uterus is thus sustained by an artificial floor;

but this is too low, and the radical cure is only the substitution of one grave infirmity for another.

All these modes of operation M. Desgranges believes incapable of fulfilling the object intended, while several of them are likely to produce danger. The opinion of M. Moreau, that pregnancy is a remedy for prolapsus, he answers by the statement that he has always seen it augmented after labour in persons in whom it previously existed.

The instruments used by M. Desgranges are small self-closing curved forceps, furnished at the end with projecting teeth; a holder resembling a pair of lithotomy forceps, but having the end of the branch channeled, for the purpose of applying the small curved forceps; a trivalve speculum; a lithotomy gorget; a pessary to distend the vagina; and a double T bandage.

Operation.—The patient, having been prepared by rest, bathing, gentle purgatives, and an enema, is placed on her back, with her thighs widely separated. The trivalve speculum is then introduced, with the handle turned towards the pubis, and the valves are separated to a circumference of about six inches. The vagina usually projects between the blades; but sometimes, when the tissue is less lax, it remains stretched. The cervix uteri must be carefully looked for, as it may lie between the valves of the speculum, like the portions of the vaginal wall.

Through the speculum, the vaginal forceps, with strings passed through their handles, are introduced by means of the holder; and, by strongly pressing on the handles of the latter, the blades of the forceps are separated. They are then placed on the projecting membrane of the vagina; and, by relaxing the hold of the handles, they are made to take firm hold of the tissues. Each projection between the blades of the speculum, or, as is sometimes found, each flat portion between them, may receive two or three of these forceps, so that from six to nine altogether are applied. The speculum being withdrawn, the pessary is introduced, and is firmly fixed by means of some turns of a double T bandage, of which the vertical bands meet the transverse one at the level of the hypogastrium; each of the vertical bands turns over the upper part of the thigh, to rest on the great trochanter. The string which attaches the pessary to the bandages ought to be rather behind than in front, as the passage of urine may otherwise be impeded or prevented by the pressure of the urethra against the pubis. The strings attached to the forceps are collected, tied together, and fastened to the bandage. The patient is then put to bed, and perfect rest is enjoined. The forceps generally fall off from the fifth to the tenth day, sooner or later, according to the size of the fold of the membrane which they have seized.

This operation is repeated on other parts of the vagina, the speculum being employed until the walls no longer project between its valves, or its being opened causes pain or hemorrhage. The gorget or finger must then serve as a conductor. The gorget is passed in on the finger to the part intended to be operated on, and is turned with its convexity towards towards the vaginal wall. The vaginal forceps, fixed in the holder, are then introduced along the groove in the gorget. When they have arrived at the end, the conductor is withdrawn, and the forceps are made

to seize the membrane. When the finger is used, the forceps are introduced along it, taking care that the finger be not wounded. On arriving at the destined spot, the blades are separated, and pressed against the vaginal wall.

The instrument is most easily applied on the posterior wall of the vagina; with more difficulty on the lateral wall; but, in regard of importance, the lateral walls have the preference. M. Desgranges has never made more than *ten* applications of the instrument. He says, that the surgeon must be guided by circumstances in judging of the proper number of applications, but that it is better to make too many than not enough.

The pain, he says, is not great, unless the cervix uteri be seized: pain then is severe, radiating to the loins and abdomen. The free extremities of the forceps may cause excoriations, unless the tissues be protected by diachylon plaster.

Results of the Operation. The febrile reaction is slight, and of short duration; and requires no treatment beyond low diet.

When the forceps have fallen off, a small suppurating wound is left. By digital examination, small hemispherical projections are felt, varying from the size of a pea to that of half a nut.

The vagina gradually loses its calibre and its mobility. At a later period, it becomes covered with inodular bands; the narrowing goes on until the finger can scarcely be introduced without a disagreeable sensation. In process of time, the nodosities become smaller, and even disappear; the vagina regains its suppleness, and, with the exception of its calibre, it returns far towards the normal state. The cervix is in the axis of the vagina; and the contraction affords no impediment to *coitus* or to delivery, as has been proved in one case.—*Association Med. Journal, May* 13, 1853, *p.* 415.

139.—*On Vaginal Cystocele, or Prolapsus of the Anterior Wall of the Vagina and Bladder, and a new Operation for its Cure.*—[At a meeting of the Medical Society of London, Mr. Brown related a case illustrating the above affection. The patient was 52 years old, and had had ten children. The case was so aggravated that with the least exertion the anterior wall of the vagina became so prolapsed that a tumour was produced by it of the size of a man's fist, producing several ulcerated patches from the friction of the parts. All means of relief which had been suggested having done no good, it was determined to try to effect this by means of operation.]

The patient having been prepared for the operation, by emptying the bowels, was, on February 15th, placed under the influence of chloroform, and then put in position for lithotomy, each leg being held by an assistant, and well bent back on the abdomen, a third assistant holding up the tumour with Jobert's bent speculum, and pressing it under the pubes in its natural position. A piece of mucous membrane, about one inch and a quarter long, and three quarters of an inch broad, was dissected

off longitudinally, just within the lips of the vagina. The upper edge of the denuded part being on a level with the meatus urinarius, the edges were drawn together by three interrupted sutures, this being repeated on the other side of the vagina. The next stage of the operation consisted in dissecting off the mucous membrane laterally and posteriorly in the shape of a horse-shoe, the upper edge of the shoe commencing half an inch below the lateral points of denudation, taking care to remove all the mucous membrane up to the edge of the vagina, where the skin joins it. Two deep sutures of twine were then introduced about an inch from the margin of the left side of the vagina, and brought out at the inner edge of the denuded surfaces of one side, and introduced at the inner edge of the other denuded side, and brought out an inch from the margin of the right side of the vagina, thus bringing the two denuded surfaces together and keeping them so, by means of quills, as in the operation for ruptured perineum. The edges of this new perineum were then brought together by interrupted sutures, and the patient placed in bed on a water-cushion. Two grains of opium given directly, and one grain every six hours; simple water dressing applied to the parts; beef-tea and wine for diet. A bent metallic catheter was introduced in the bladder, to which was attached an elastic bag to catch the urine, by this means the bladder was constantly kept empty. This patient progressed satisfactorily from day to day without a single unfavourable symptom, and on the 22nd the deep sutures were removed, and the parts found firmly united, the lateral interrupted sutures were gradually removed, and firm union was found to have resulted. On the 26th, examined very carefully the vagina, and found the deep union perfectly sound, about three quarters of an inch thick, the lateral wounds well contracted; the tumour could not be brought down by coughing. March 8: The parts are all firmly healed; the patient much improved in health, with a very cheerful aspect of countenance; she can walk about without inconvenience, and no amount of exertion produces any prolapsus; she can empty her bladder with comfort, and all the leucorrhœal discharge, which was so distressing before the operation, has entirely subsided; the offensive smell from the decomposition of the urine has also disappeared. On passing the finger into the vagina, the os uteri can be felt easily in its normal position, and the ulcerated spots which formerly existed on its surface are healed. On the 10th, she was discharged cured, and resumed her duties as domestic servant.

Remarks.—It will be observed, that the object sought in this operation was the contraction of the calibre of the vagina, which, as may be imagined, was exceedingly enlarged and flabby. The first step of the operation was the contraction of the vagina laterally, so as to prevent the tumour from falling down from above; the second step of the operation was for the purpose of contracting the vagina posteriorly as well as laterally, and finally adding to the extent of the perineum by contracting the orifice of the vagina at least two-thirds, so that should the prolapsus not be restrained by the lateral contractions, it could not extrude beyond the orifice of the vagina, but must necessarily fall upon the new perineum. As is proved by the result, all the objects sought have been fully attained, and it is scarcely possible to imagine a more satisfactory

result from any operative procedure. It will also be observed, that the benefits from this operation, for vaginal cystocele, will be equally, if not more, applicable to vaginal rectocele, as well as to prolapsus of the entire vagina, and also, with some slight modifications as to the denudation of the mucous membrane, to prolapsus uteri.—*Lancet, April* 30, 1853, *p.* 412.

140.—*Ulceration of the Cervix Uteri Treated by the Application of Collodion.*—The 'Bulletin Générale de Thérapeutique' for January 15th, states that M. ARAN employs collodion with success in certain cases of ulceration of the neck of the uterus, especially those which depend on, or are kept up by, the friction of the vagina against the cervix, directed either forwards or backwards. An illustrative case is related of a woman, aged 29, who was admitted into the Hôpital de la Pitié, who had for two years suffered from headache, dyspepsia, leucorrhœa, and dragging pains in the lumbar and hypogastric regions. These symptoms had for six months become much more severe. On examination, M. Aran found the uterus in a state of anteversion; the neck was large and extensively ulcerated, principally at the posterior part, which was directed towards the hollow of the sacrum. Rest, slight cauterization from time to time with nitrate of silver, baths every two days, poultices, enemata, and emollient injections, were tried for more than three months without any marked result. When lying down, the patient did not suffer; when erect she was troubled with dragging sensations in the loins and hypogastrium. M. Aran applied collodion over the cervix, by means of a brush. The patient only felt a slight burning sensation when the speculum was removed. Three days afterwards, most of the collodion had remained, and the ulcer, which could be seen through it, appeared to be rapidly progressing towards cicatrization. The application of collodion was repeated three times within a month; and at the end of this period, cicatrization was nearly complete. At the same time, the dragging in the loins and the pains in the stomach had diminished, and the leucorrhœa had completely disappeared. The patient walked without pain or difficulty; her general health seemed excellent; and with the exception of a little weakness in the loins, and some heaviness of the head, she felt quite well.

This is satisfactory enough as far as it goes; but has the cure been permanent? On this subject we have some fears; for it is stated that "the anteversion is still much marked"; and in this case the tilting of the cervix backwards, and the consequent friction of its posterior lip against the vaginal wall, may reproduce the ulceration.—*Association Med. Journal, May* 27, 1853, *p.* 468.

141.—ON OVARIAN TUMOURS AS A CAUSE OF DIFFICULT LABOUR.

By Professor LITZMANN, of Kiel.

The 'Deutsche Klinik,' for 1852, Nos. 38, 40, and 42, contains an article by Professor Litzmann, on the influence of ovarian tumours in producing difficult labour. The following is an abstract of this interesting paper.

It is a recognized fact, that conception is no more prevented by the degeneration than it is by the extirpation of one of the ovaries. Pregnancy seems in many cases to induce a more rapid growth of the ovarian tumour: this is especially true with reference to cystous and cancerous tumours. Fatty growths, as a rule, are not affected by gestation. Gestation is also prematurely interrupted by ovarian tumours; partly from their mechanical pressure on the uterus, and partly, (especially in cancer), by the setting up of a profound disturbance of nutrition and innervation. Small ovarian tumours, which entirely or partially sink into the pelvis, are apt, from their pressure, to bring about abortion at an early period of pregnancy.

If pregnancy reaches its full period, the labour may end naturally, both as regards mother and child; but more frequently ovarian tumours give rise to impediments endangering the life of the mother as well as of the child. To thirty-one cases collected by Puchelt, jun., Dr. Litzmann has added fifteen from various sources, and one case described by himself—making in all forty-seven cases, in which labour was impeded by ovarian disease. Of these cases, in twenty-five the diagnosis of ovarian tumour was confirmed by section or by puncture: four of the tumours were simple cysts, three were compound, twelve were fatty cysts, and six were scirrhous growths. In the other twenty-two cases, the relation of the tumour to the ovary is not pointed out. The diagnosis during life is by no means easy, and can for the most part be considered only as more or less probable. In general, large tumours, lying entirely or partially over the entrance of the pelvis, are readily distinguished; while in small tumours, occupying the posterior part of the pelvic cavity, the diagnosis from other tumours which occur in this part is difficult. These ovarian tumours are always found in the space between the vagina and the rectum. The principal signs by which they can be distinguished from fibroid cystic growths, &c., between the vagina and rectum, are their gradual direction from the synchondrosis on one side toward the middle of the hollow of the sacrum, and the possibility of pushing them more or less easily above the entrance into the pelvis. But commonly the tumour is first detected only when it is entirely in the pelvis, and when its reposition during labour is not unfrequently prevented by the pressure of the gravid uterus or by adhesions. Fibrous and scirrhous growths from the inner surface are distinguished by their not easily mistaken place of origin, as proved on examination *per rectum*. More difficult, and often even impossible, is the diagnosis from other tumours in the recto-vaginal space, as cysts of the uterine ligaments, or of the Fallopian tubes, or tumours of the posterior wall of the uterus. As the latter are found very rarely to produce hindrance to labour, the detection of a tumour in doubtful cases affords a strong suspicion that it is ovarian. It is of especial importance to discover whether the tumour be solid, or a cyst, whose contents may be let out by puncture or incision. Fluctuation if present in the least degree, will be best detected by examining the tumour simultaneously through the vagina and rectum in the intervals of the pains. The smoother and more equally developed the swelling is, the greater is the probability of its being a cyst.

Ovarian tumours are most dangerous to the progress of labour, when they are wedged more or less deeply in the pelvis: but tumours lying above or upon the entrance into the pelvis may, in certain circumstances, produce a great mechanical impediment.

The forty-seven cases related contain a notice of the progress of, in all, fifty-six labours. In ten, natural delivery took place, mostly after tedious labour and severe pains. In two cases natural labour was assisted by the death and putrefaction of the child, in another by the pliability of a hydrocephalic head. One child was born alive; the reports do not state the fate of the others. Four of the mothers died.

In seven cases, the tumour was pushed above the pelvic entrance. In three of these cases, turning was performed; in one, the forceps were applied; and in three the labour proceeded naturally after the reposition of the tumours. Two of the children were still-born; and of five born alive, two soon died. One of the mothers died.

In nine cases, puncture or incision of the tumour was performed; once through the abdominal parietes; twice through the rectum; and in all the other cases through the vagina; always with the effect of diminishing its volume. In three cases, labour proceeded naturally; in three, perforation and extraction had to be performed; in one case, turning was necessary; and in one, the forceps were applied. Only one child was born alive; and five of the mothers died.

The forceps were applied in altogether eleven cases: once after puncture; once after reposition of the tumour; once to extract the head in a case of turning; and in one case they were ineffectual, and delivery had to be effected by embryotomy. In all the other cases, the forceps were the only instrumental means employed; in these, two of the children were still-born, and four of the mothers died.

Turning was performed in eight cases; in three after reposition of the tumour, and in one after puncture. The results to the life of the mother and the child are not stated with sufficient accuracy. Extraction in foot-presentation was performed in three cases; all the children were dead.

Embryotomy was performed in seventeen cases; in four after puncture (in which three of the mothers died;) and in one case in artificial premature labour; of the remaining twelve cases, five were fatal to the mothers.

Premature labour was induced in two cases.

Of the whole, seven children were born alive, thirty-five were still-born, while there is no account of fifteen; of the mothers, thirty-two recovered, and twenty-four died.

In the treatment of these cases, a principal rule is not to delay operative interference too long, as it is very rarely that a favourable termination to the labour, as regards both mother and child, is to be hoped for from the powers of nature. By delay the life of the child is almost always sacrificed: its skull usually undergoing pressure between the tumour and the wall of the pelvis, as in a case of narrow pelvis. As regards the mother, besides the tediousness of the labour, the unavoidable bruising of the tumour and of the weaker parts of the pelvis is to be feared; and when the pains are violent, there is risk of rupture of

the uterus or of the tumour. The result of every operation, to which recourse has been had at a late period, is doubtful.

During labour, we must first attempt to push the tumour, *per vaginum* or *per anum*, above the pelvic entrance. The most convenient period for this appears to be immediately after the rupture of the membranes, or as soon as more active pains have set in. If reposition is not possible, no time must be lost in ascertaining whether it is possible to diminish the size of the tumour by evacuation of its contents. This is best performed by puncture through the vagina with a curved trocar; and if the contents are too firm, the aperture may be enlarged by incision. If this operation is ineffectual, the choice lies between embryotomy and the Cæsarean section. Extirpation of the tumour during labour seems to have not yet been attempted. No help can be expected from the forceps or from turning, unless the size of the tumour have been previously reduced. With regard to the indication of premature labour, Dr. Litzmann thinks it but rarely indicated; as the narrowing of the pelvis by ovarian tumours is mostly so remarkable, that without previous reposition, a living child cannot be delivered even prematurely. He says that it should be performed only in those cases in which there is narrow pelvis as well as an ovarian tumour.—*Association Med. Journal, May* 27, 1853, *p.* 469.

142.—*Tuberculosis of the Vagina.* By M. R. Virchow.—Some time ago, I had an opportunity of witnessing, in an old woman, an affection hitherto unknown to me. The patient had long suffered from dysuria, and there was found, after death, very extensive tuberculosis of the urinary organs. The upper part of the right kidney was in great part destroyed; the corresponding parts of the infundibula and pelvis in a state of cheesy ulceration; the remaining part of the renal pelvis and the right ureter studded throughout with small knots, partly grey and solid, partly white and ulcerous. Even in the cortical substance of the kidney there were found yellow knots. The urinary bladder was, in the upper part, thickly granular, with numerous little groups of grey knots; at the lower part, by the neck and urethra, it was hyperæmic, and studded with more isolated and finer grey tubercles. In the vagina there was found a similar eruption, mostly arranged in groups upon a base of red and injected mucous membrane, each single tubercle appearing as a fine grey pearl. They were sparingly distributed at the entrance of the vagina. They had not ulcerated in any part. Under the microscope they appeared to consist of granular masses, composed of soft cells,—a deposit which constitutes, in all cases, recently-formed tubercle. I saw none in the rectum or in the uterus of this patient.—*Virchow's Archiv.* 1853.

[Some time ago, Mr. Holmes Coote recorded a case of this disease in the lining membrane of the uterus.]—*Med. Times and Gazette, June* 11, 1853, *p.* 606.

143.—FURTHER RESEARCHES ON THE PATHOLOGY OF PHLEGMASIA DOLENS.

By Dr. Robert Lee, F.R.S.

[Various theories upon this disease existed until the memoirs of M. Bouillaud, M. Velpeau, and the late Dr. Davis demonstrated that it consisted in an inflammation of the trunk and principal branches of the veins of the lower extremities. The following observations are taken from a paper read by Dr Lee, before the Royal Medical and Chirurgical Society.]

In papers by the author, published in the fifteenth volume of the 'Transactions,' the actual condition of the iliac and femoral veins was ascertained, and he had been led to infer, that inflammation of these veins gave rise to all the phenomena in puerperal woman of phlegmasia dolens, and that it commenced in the uterine branches of the hypogastric veins, and subsequently extended from them into the iliac and femoral trunks of the affected side. Other cases had been recorded in the 'Transactions,' of crural phlebitis following ulceration of the mucous membrane of the intestines. Experiments performed by Pirigott in 1839, and by Reumert in 1840, on dogs, showed that the action of chemical and mechanical irritants was limited to the vein on which the experiment was made, and the extension of the inflammation in the veins was not common; and Stannius, who had collected and tested all the facts bearing on the subject, doubted whether inflammation of venous trunks admitted of being excited by constitutional causes, independently of local irritation. A series of experiments on the veins of the lower animals similar to those just mentioned had recently been made, and a paper on phlegmasia dolens had been read to the Society during the present session, not founded on actual observation of the disease as it occurs in the human subject, but upon experiments on the veins of the lower animals in which phlegmasia dolens had never been observed. The object of the present communication was to submit to the Society the observations which the author had made during the last twenty-four years on inflammation of the crural veins. The paper contained the record of forty-three cases of phlegmasia dolens. The first nine cases were accompanied by *post-mortem* descriptions, and preparations illustrating the disease; and the author was led, from the whole of the facts thus adduced, to the conclusions he had formerly expressed, "that inflammation of the iliac and femoral veins gave rise to all the phenomena of phlegmasia dolens, and that the inflammation commenced in the uterine branches of the hypogastric veins, and from them extended to the iliac and femoral trunks of the affected side." The next series comprised the history of twenty cases, which the author thought furnished additional evidence in favour of this conclusion, though, in consequence of the recovery of the greater number of the patients, an opportunity was not afforded of determining by dissection the actual condition of the crural veins. Nine cases followed, which demonstrated that phlegmasia dolens might occur wholly unconnected with pregnancy and parturition, and that in such cases the inflammation likewise commenced in the uterine branches of the hypogastric veins, and followed a course similar to what occurred in puerperal cases. In some of these the inflamma-

tion of the uterine veins was produced by cancerous disease of the os and cervix uteri; in others there was no organic disease of any kind previously existing. The concluding cases were five, in which crural phlebitis had followed inflammation of the saphena veins, and of the deep veins of the lower extremmities, from fracture of the tibia and fibula, and the pressure of encephaloid tumours on the thoracic viscera. The author thought that these cases and dissections, as well as those of the distinguished authors, whom he had quoted, proved in the most conclusive manner that inflammation of the iliac and femoral veins was the proximate cause of phlegmasia dolens; and that in puerperal women this inflammation commenced in the uterine branches of the hypogastric veins. It had likewise been demonstrated, by morbid anatomy, that phlegmasia dolens was a disease which might take place in women who had never been pregnant, and even in the male sex, and that, under all circumstances, the proximate cause was the same.

[Dr. MACKENZIE observed that the facts alleged were, that certain lesions of the crural veins were developed in the progress of phlegmasia dolens; but he dissented from the conclusion that these lesions constituted the essence or proximate cause of the disease.]

The disease known as phlegmasia dolens was a very complex malady. It was one which was characterised, not only by a morbid condition of the veins, but by a morbid condition of the sensory, the motor, the lymphatic, and the secretory organs of the effected extremity also; and accordingly, in all well-marked cases of the disease, there was exquisite sensibility of the limb, especially in the track of particular nerves, loss of motor power, amounting sometimes to perfect immobility of the extremity, inflammation and obstruction of the lymphatic vessels and glands, and a general hot, tense, and elastic swelling of the limb, not simply arising from œdema, but possessing rather the character of active exudation than of passive effusion. Now, could all these lesions depend upon or be deduced from mere inflammation and obstruction of the principal vein of the extremity? Were they ordinarily observed in cases of simple, uncomplicated phlebitis? Or, if not, was there anything in the anatomical or physiological characters of the veins to justify our deducing them *á priori* from it? And if we replied to these questions, as he submitted that we must, in the negative, he should ask whether those who adopt this theory have undertaken any particular investigation for the purpose of determining this point? In other words, have they reproduced the lesion of the veins in a simple, uncomplicated form, and observed such consequences to follow? Now, to these questions we must also reply in the negative, and it must be added, that the whole matter rested purely on assumption. It had been assumed, that because the crural veins were found obviously diseased in fatal cases of phlegmasia dolens that such lesions constituted the proximate cause of the disease. No further steps had been taken to establish the truth of this doctrine, and that, therefore, had been taken as a matter of assumption which ought to have been made a matter of demonstration. Further, he would observe, that the clinical history of the disease and the progress of symptoms did not support this theory. It was quite true that in some cases the first irrita-

tions commenced in the region of the femoral vessels, but in others it was far otherwise; in some they commenced in the back, in others in the hip, sometimes in the calf of the leg, and more frequently in the popliteal region. Again, one leg might be affected alone, or both lower extremities concurrently; or the disease, after having attacked one, may pass on to the other, or a superior extremity might be affected; and he had lately met with a case in which, after symptoms of the disease had successively declared themselves in the left lower and upper extremities, the malady ultimately established itself in the right arm, the whole right upper extremity being hot, swollen, and tense, the surface exquisitively painful, with loss of motor power, and a tense, corded condition of the basilic vein. Now, it appeared to him that these facts were inconsistent with the theory, that the proximate cause of the disease was essentially inflammation of the crural veins. They pointed to the existence of some more general and diffusive cause, in regard to which it was probable that phlebitis itself was but a secondary affection. Again, he would point to the general experience of the Profession as being opposed to this theory. It was now upwards of thirty years since it was first promulgated by his friend and teacher, the late Dr. David Davis; and, although the facts upon which it rested were well known, it was yet very far from being generally adopted. Thus, in this country, Dr. Burns affirmed, that the nerves were as much affected as the veins. Others regarded the lymphatic vessels as being principally affected; while many, dissatisfied with these restricted views of the pathology of the disease, preferred the theory of the late Dr. Hull, that it consisted in a general inflammation of the several organs and structures of the affected limb. So again, on the Continent, the greatest difference of opinion existed respecting its nature and pathology; and, while many affirmed, that it consisted essentially in inflammation of the lymphatics, and others that it was a specific inflammation of the cellular tissue, nearly all agreed that, in its general characters, it differed widely from ordinary phlebitis. Now, this diversity of opinion existed notwithstanding that all were aware of the facts upon which the phlebitic theory of the disease rested; and it afforded a powerful argument against it, because it tended to show that, when tested by general experience, and considered irrespectively of particular facts, and free from bias, it failed to account rationally for all the known phenomena of the disease, and consequently could not be regarded as its proximate cause. Then, in the sequelæ of the disease, circumstances were met with which are inconsistent with this theory. We know, for instance, that after an attack of the disease, the crural veins are generally left impervious or obliterated, and yet successive attacks of the disease may occur in the same extremity. Now, if it be true that the first attack left them in the condition described, it was difficult to understand how these vessels, having functionally ceased to exist, could again take on functional activity, and become the seat of active inflammation. So also it happened after an attack of the disease, that the limb would be left for many years, or even for the remainder of life, in a weak, sensitive, and irritable condition, being easily affected by atmospheric and constitutional influences. It was easy to reconcile these facts with the notion, that the nerves had been injured or damaged by the attack, but not with

the idea that the veins alone had been affected. On all these grounds, then, it appeared to him (Dr. Mackenzie) that the phlebitic theory of the disease was either defective or erroneous. But, assuming for a moment that it was correct, he would observe that it left much which was still to be explained. We had yet to learn the nature of that peculiar inflammation of the veins met with in this disease which was so exceptional, and so different from ordinary phlebitis. Did it depend upon some peculiar disposition on the part of the venous coats to take on diffusive inflammation, or did it depend primarily upon the blood? If we adopted the first of these theories, we were bound to state the nature of the peculiarity, and the laws of its development. For to be satisfied with merely giving it a name, and to speak of it as a 'specific' inflammation, was not to advance our scientific knowledge, but rather to take refuge, or to hide our ignorance under the shadow of a name. If, on the other hand, we accepted the latter view, and regarded the venous inflammation as dependent upon some morbid condition of blood, then, indeed, we might reasonably account, not only for the peculiarities it presented, but for all the several lesions of other organs, and the structural changes with which it was associated. Upon this view, also, we might reconcile the conflicting opinions respecting the nature of the disease which had been held by different pathologists, and the variations which it manifested in its symptoms and progress in different cases. But, in accepting this view, we must forego the theory that phlebitis was the proximate cause of the disease, and regard it, as it really was, as a secondary rather than a primary phenomenon; related to the other lesions of the extremity, not so much in the order of cause and effect, as in being, like them, a parallel effect of some more general and diffusive morbific agent.—*Med. Times and Gazette, June* 4, 1853, *p.* 583.

144.—DEFICIENT MENSTRUATION, COMMONLY TERMED CHLOROSIS.

By Dr. W. S. Oke, Physician to the Royal South Hants Infirmary.

[Dr. Oke observes:]

It has fallen to my lot to have had extensive experience in the treatment of this disease; and I can confidently affirm, that, where this atonic condition of the system is not complicated with any co-existing organic disease, the following simple treatment has seldom if ever failed of complete success. One of the pills (*a*) is to be taken every other night, and two of the pills (*b*) three times a day:—

(*a*) ℞. Hydrargyri chloridi gr. xij; pilulæ aloes cum myrrhâ gr. xlviij; syrupi, q. s. Misce et divide in pilulas xij.

(*b*) ℞. Pilulæ ferri comp. iij. Divide in pil. xxxvj.

If there be diarrhœa, the pills (*c*) are to be taken instead, leaving out, of course, the aperient:—

(*c*) ℞. Pilulæ ferri comp. ʒiij.; pulveris opii gr. iv.; syrupi q. s. Misce et divide in pilulas xxxvj, quarum capiat duas ter die.

It occasionally happens that an individual cannot swallow medicine in the form of pills, in which case (*d*) may be prescribed with equal success:—

(*d*) ℞. Misturæ ferri comp. ℥viij.; decocti aloes comp. ℥iv. Misce. Capiat ℥iss. ter quotidie.

If necessary the bowels may be regulated by the powder (*e*) taken in jelly:—

(*e*) ℞. Hydrargyri chloridi gr. j.; aloes socot. pulv. gr. iij.; pulv. cinnamomi comp. g. ij. Misce. Fiat pulvis noctibus alternis sumendus.

Amongst the better classes of society, the patient is often sent to the sea-side, or some other place, for change of air, without the aid of medicine; but this is at best a tedious remedy, if it be a remedy at all: whilst the treatment above recommended will bring about convalescence in six weeks or two months, without any change of locality.—*Association Med. Journal, May 6, 1853, p. 392.*

145.—*Neuralgic Menstruation, commonly termed Dysmenorrhœa.* By Dr. W. S. Oke.—[Frequently the menstrual secretion commences with and is accompanied by pain in the abdomen, back, and hips, varying in its degree of intensity. Frequently this may be alleviated by the hip-bath, opiates, belladonna, digitalis, purgatives, electricity; or, if inflammatory, by cupping over the sacrum; in other cases, however, no relief is obtained from any of these measures.]

Case. A lady, aged twenty-six, well formed, and of dark complexion, from a disappointed attachment had become deficient in her menstruation; and the diminution was accompanied with hysterical paroxysms, and the most intense pain of the uterine region, as soon as the secretion commenced. This state of extreme suffering continued for some years, and rendered her existence quite wretched. She had consulted a variety of medical men, and many remedies had been tried, to remove or alleviate her pains. She had been locally bled, had frequently used the warm hip-bath, with purgatives, opiates, antispasmodics, &c.; but all these means had fallen short of any permanent relief. The only remedy which had given her any respite was large doses of the liquor opii sedativus, although it always disordered her system. In such a case as this, as all ordinary remedies had been found unsuccessful, and reflecting that the indication of cure was clearly to subdue the morbid action of the uterus, and restore its normal secretion, I resolved to combine some preparation of iron with a sedative which would *not contract* the secernent cavity of the uterus; accordingly, she was immediately placed under the following treatment:—

℞. Pilulæ ferri compos. ʒij.; extracti conii ʒj. Misce et divide in pilul. xl. quarum capiat duas ter quotidie.

This plan was steadily observed through the interval up to the next period, after which she wrote to me, stating that it had passed with an increased secretion, and without suffering or hysteria. The treatment was persisted in for some months with complete success; and two years

have elapsed without any return of suffering. I considered this an important case; and, as others of a similar character came under my notice, they were placed under the same treatment, and almost always with a successful result. Opium, in one shape or another, will doubtless, in large doses, afford temporary relief to the severity of the pain in dysmenorrhœa; but as it tends to cause contraction of the uterine cavity, and therefore rather restrains than encourages the menstrual discharge, it is not a desirably remedy.

I do not wish it to be understood that the above treatment is recommended for the relief of all cases of dysmenorrhœa. When the symptoms indicate an inflamed condition of the internal membrane of the uterus, manifested by the discharge of fibrinous shreds and febrile disturbance of the system, such treatment is of course inadmissible, and the case must be treated according to its indications by local bleeding, by the warm hip-bath, digitalis, saline aperients, &e.

Dysmenorrhœa, as well as leucorrhœa, may be sometimes also caused by the local irritation of ulcers, either within or near the os uteri; and has been successfully treated by the application of the nitrate of silver, through the speculum—an instrument which has bronght to light local causes of uterine disease, which had long escaped detection by the ordinary means. When, therefore, in dysmenorrhœa, the symptoms are found to resist general methods of cure, and when the intermenstrual mucous discharge from the vagina is ascertained to be purulent and mixed with streaks of blood, it may be fairly inferred that the painful character of the menstrual period is kept up by epithelial ulceration, too far within to be discovered by common observation, and too superficial to be detected by the finger. In such a case, the speculum should be employed without hesitation, in order to decide the question, and allow of the application of such local remedies as may be required. The speculum is undoubtedly a most useful instrument for the diagnosis and treatment of diseases of the distal end of the vagina and the os uteri; but where the symptoms are derived from induration and enlargement of the cervix uteri, the speculum might overlook what the finger will not fail to discover. Such cases are of no uncommon occurrence. The enlargement is most frequently found on the posterior part of the cervix, and in my experience is very difficult of cure, even when it is not of a malignant character. On the other hand, the practice of frequently introducing the speculum, to have ocular proof of the condition of the os uteri, before a fair trial of other remedies has been made, whatever may be the patient's class in society—whether she be in her own dwelling, or in a public institution—whether in a mansion or in a cottage,—ought, in my judgment, to be considered an abuse of a most useful instrument, and condemned as a demoralizing procedure.—*Association Med. Journal, May* 6, 1853, *p.* 392.

146.—*Profuse Menstruation, commonly termed Menorrhagia.* By Dr. W. S. Oke.—[This condition may occur at any period of life, and be caused by either a plethoric or debilitated condition of the system, or by some local irritation of the uterus, as by a polypous growth.]

When menorrhagia takes place in plethoric habits, it is manifestly remedial, and ought not to be hastily restrained. In such a case the plethora is the object to be kept in view, rather than the discharge; and it will be best treated by a cooling diet, the recumbent position, and the mixture (*a*).

(*a*) ℞. Magnesiæ sulphatis ʒ vj.; infusi rosæ comp. ℥ vss.; syrupi simplicis ℥ ss.; acidi sulphurici diluti ℥ ss. Misce. Fiat mistura, cujus capiatur fluiduncia ter quotidie.

But when the discharge has continued for a considerable length of time, producing an anæmic condition and great debility, the indication of cure will clearly be to restrain the uterine flux as speedily as possible by general and local means.

The system may be strengthened by (*b*).

(*b*) ℞. Confectionis rosæ ℥ ss.; infusi rosæ comp. ℥ iij.; decocti cinchonæ ℥ iij. Misce et cola.

Colaturæ adde,

Acidi sulphurici diluti ʒ j.; tincturæ opii ♏ xxx. Fiat mistura, cujus capiat quartam partem ter quotidie.

Opium, in menorrhagia from this cause, is a valuable remedy, as it is found to increase the force of circular muscles; whilst henbane, hemlock, and belladonna relax them. Hence it is that the former contracts whilst the latter dilates the iris; and hence, also, the great use of opium in restraining profuse and dangerous hemorrhage after parturition, by causing contractions of the muscular walls of the uterus.

The bowels, if necessary, should be regulated by gentle aperients, such as the following:

℞. Pulveris rhei, balsami copaibæ, āā ʒ ss. Misce; et divide in pilulas xij, quarum capiat duas horâ somni pro re natâ.

Turpentine and the secale cornutum have also been found efficacious in restraining menorrhagic discharge.

The best local remedy is the sulphate of alum hip-bath, which may be made in the proportions of twelve ounces of alum to two gallons of water. It may be used daily for about twenty minutes, first tepid, thence gradually reducing it to the normal temperature.

Should the discharge continue unabated, notwithstanding the use of the above remedies, a polypous growth or some morbid condition of the uterus is to be suspected; and the uterus must then be examined.—*Association Med. Journal, May* 6, 1853, *p.* 394.

147.—ON THE USE OF CINNAMON IN CERTAIN EXAMPLES OF MENORRHAGIA.

By Dr. T. H. Tanner.

[We frequently meet with cases of menorrhagia where no satisfactory explanation can be given of the increased discharge.]

The symptoms usually presented are briefly these: the catamenia appear regularly every twenty-eight days, and are at first only of the proper quantity; but, instead of ceasing after a duration of three or four

days, they continue unabated for ten or fourteen, and occasionally even for three weeks. The general symptoms which arise from this debilitating discharge are just such as might be expected. There is general weakness, languor, mental depression, with pains in the head, loins, and so on; the patient suffering, it is to be remembered, not from any diseased condition, giving rise to the hemorrhage, but merely from the loss of blood itself. In other instances the discharge continues a less time, but the flow is more abundant, clots being frequently discharged; this variety is generally followed by leucorrhœa. My own experience tends to show that these forms of menorrhagia occur more frequently in unmarried than in married women; but, for many reasons, and especially because of the class of patients from whom my observations are for the most part deduced, I would not say positively that such is the case.

Ailments of this class are at all times troublesome to cure, but those I am considering are particularly so, from the absence of any special indications for treatment. In some of them, indeed, it appears, at first sight, only necessary to keep the patient quiet, to administer astringents, especially such as act particularly upon the uterus, and to regulate the diet, in order to give the desired relief. But it will often be found that these means are quite inefficient, and the acetate of lead, gallic acid, the ergot of rye, oxide of silver, sulphuric acid, tincture of sesquichloride of iron, and similar remedies may be employed without any avail. In thinking over these cases I was led, from a remark made by Dr. Pereira, to try the use of cinnamon. In the last edition of the 'Elements of Materia Medica,' this gentleman says, when speaking of cinnamon, that 'some writers regard it as acting specifically on the uterus,' (vol. ii. p. 1307,) and reference is then made to the writings of Sundelin and Wibmer. As far as I know, these are the principal authors who have recommended the use of this agent; for I am not aware that mention is made of it by gentlemen who have written on obstetrics and diseases of women in this country. Having thus been led to try the effects of this agent, and having derived the most beneficial effects from its employment, I have felt desirous of making its value more generally known, that its utility may be tested on a large scale.

That its beneficial action is really due to some specific effect which cinnamon exercises upon the uterus, and not any astringent property it may possess from the tannic acid which the bark and leaves of it contain in common with all the lauraceæ order of plants, is, I think, certain; and partly in confirmation of this view, it may be mentioned, that in a case of labour in which I employed it, it *appeared* not only in a marked manner to increase the severity and rapidity of the pains, but the patient, who had in her previous labours suffered severely from flooding after the birth of the placenta, on this occasion lost only a very small quantity of blood. That this fortunate circumstance was due to the administration of the cinnamon I do not of course pretend positively to assert; the case is merely mentioned to give some colour to the opinion expressed that this agent acts specifically upon the uterus. Much clearer evidence of its value in such cases of menorrhagia as I have described, is, however, easily obtained. The principal points I would now refer to are, that it acts after the failure of other astringents; that it is most

efficacious given alone, uncombined with other medicines; that if its employment be discontinued too soon, the discharge of blood returns; while, in a few instances, it has been found necessary, after an apparent cure, to resort to its employment for the two succeeding catamenial periods, when the menstrual flow after continuing for three or four days, has not given any signs of abatement, and when the patient has begun to suffer from mental depression and the early symptoms of general debility. The form usually employed, and which appears to be the best, is that of the tincture, in drachm doses, using cinnamon water as the vehicle; it should be taken about every six hours, but not more frequently, as it is apt to give rise to nausea and vomiting. It is also better to continue its administration for about fourteen days after the symptoms which called for its employment have disappeared; and even then, if the case has been an obstinate one, a draught composed of it should be taken once daily for a month.—*Lancet, Oct.* 15, 1853, *p.* 363.

148.—CASE OF FIBROUS TUMOUR OF THE WOMB REMOVED BY INCISION AND ENUCLEATION.

Under the care of T. P. Teale, Esq., F.L.S., Surgeon to the Leeds General Infirmary.

[The patient in this case was fifty-six years old. She was extremely fat and anemic. Since her last child, which was born nine years ago, she had been subject to profuse uterine hemorrhages. The pelvis was filled with a smooth rounded elastic tumour, descending as low as, and resting upon, the perineum. It could not be ascertained whether it was pedunculated or closely attached to the surface of the womb. Mr. Teale says:]

The first step in the operation was to grasp the tumour by a pair of fenestrated forceps, as used in midwifery. By firm traction of the mass downwards, and movements of it from side to side, a great portion of it was gradually brought outside of the vulva; but, as soon as the forceps was removed, it receded within the pelvis. This was repeated two or three times, until at length I brought it so low down that Mr. Haymes could retain it by the grasp of both his hands, until I had applied around its upper part a strong whipcord, by the aid of Gooch's double canula. By this ligature, which was applied for the purpose of retention, and not for strangulation, the tumour was held downwards, and prevented from receding; and I was thus able to determine, without difficulty, the relations of the upper part of the tumour to the body of the womb. It was then found that the tumour was not pedunculated, but was imbedded at its upper part, by a broad base, in the substance of the posterior wall of the womb, which was now partially inverted by the traction which had been employed. By means of long curved probe-pointed scissors, I made a transverse incision through the investing membrane of the tumour, a little above the ligature that had been applied, large enough to admit the tips of three fingers, by which I was enabled, slowly and cautiously, to enucleate the imbedded portion of the tumour from the uterine wall; so that it only remained attached by the undivided portion of the invest-

ing membrane, which was now divided by the scissors, and the entire mass was removed. The process of enucleation resembled much the turning out of a fatty tumour from its cellular bed. I now examined the vagina, and found it occupied by an elongated mass, as thick as the wrist, which was immediately recognised as the inverted womb. By compressing this mass with the fingers, and pushing it steadily upwards. the womb slowly receded, and at length suddenly resumed its natural position; after which the parts presented the ordinary characters which are observed in a person recently delivered of a child; but the womb felt of rather smaller size. The operation was completed at 8 p.m. In two hours afterwards the patient was perfectly easy, free from hemorrhage, and her pulse 80.

On the following morning, she felt quite comfortable, having slept well, and her pulse was 80. So slight was the loss of blood, that during the night she had only soiled moderately one napkin.

The tumour weighed a pound and a-half. Its length was seven inches; circumference at the broadest part, eleven inches; and at the line of incision ten and a-quarter inches.

Remarks.—1. The practicability of enucleating some fibrous tumours of the womb, previously established, and further confirmed by this case, is a fact of great importance in the treatment of those fibrous masses which protrude from the interior of the womb, without having a pedun-cle or a well-defined neck. Although enucleation has been previously practised, I am not aware of the modification of the process by incision having been hitherto adopted. By the transverse incision of the investing membrane at its upper part, the trouble of enucleation is greatly diminished. I may also remark, that the process adopted in this case, as compared with the incomplete separation of the mass by ulceration consequent upon the application of a ligature, was a great saving of constitutional effort, as well as a much more complete removal of the disease.

2. In cases of large tumour of this kind, where it is impossible to determine by the fingers its mode of attachment, we may, by traction downwards, even beyond the external parts, accurately determine the nature of its connexion, and easily reach the site of operation. But, when inversion has been thus produced, it is important that the operator should, without delay, attempt the replacement of the womb; and he may do this, as in the present case, with the greatest hope of success, as the mouth of the womb, from long distension, is not disposed at the moment to contract with great force.—*Med. Times and Gazette, Aug.* 20, 1853, *p.* 194.

150.—*Case of large Cyst in the Labium Pudendi analogous to Hydrocele of the Spermatic Cord.* Under the care of T. P. Teale, Esq., F.L.S., Surgeon to the Leeds General Infirmary.—[For the notes of this case, and for the examination of the contents of the cyst, we are indebted to Mr. Scattergood, formerly an assistant surgeon at the Infirmary.]

Esther Gilbert, aged 55, married, was admitted into the Leeds Infirmary June 24, 1847, on account of a tumour occupying the right labium pudendi. The tumour was of oblongo-oval form. It commenced at the lower part of the inguinal canal, which was apparently occupied by it, and extended downwards, distending the labium, and forming a pendulous mass hanging down between the thighs; fluctuation was distinct throughout its whole extent. She stated, that more than a year ago she perceived a lump, as large as a pullet's egg, in the upper part of the labium. Since that time it had gradually enlarged, but had never been painful. The bowels were generally costive, but never obstructed; her general health was pretty good; menstruation ceased three or four years ago. On puncturing the tumour with a grooved needle, a fluid issued, resembling in appearance thin dirty cream.

[On June 26, Mr. Teale tapped the tumour, and removed three pints of a dirty milky fluid, sp. gr. 1026. It had a slightly acid reaction, and was not rendered viscid by boiling with liq. potassæ. The microscope showed the presence of a large quantity of oil globules. The sac subsequently refilling, Mr. Teale, after tapping it, injected ʒ ij. each of tincture of iodine and rectified spirit of wine. As it refilled, it was again tapped, and double the quantity of the injection used. The cyst did not now distend so rapidly as on former occasions, but the patient soon afterwards died of some disease unconnected with the tumour. Mr. Teale suspected it to be a cyst developed in connexion with the round ligament, analogous to hydrocele of the spermatic cord in the male. No opportunity, however, was afforded of a post-mortem examination.]—*Med. Times and Gazette, July* 30, 1853, *p.* 113.

150.—*On the Diet of Infants.*—We have had a considerable experience in directing and observing minutely the rearing of infants upon a substitute for mother's milk. We never allow a healthy infant, for the first two months, to have any other food as a substitute for its mother's milk than cow's milk diluted with two-thirds of water, and well sweetened with fine sugar. Of this fare we sanction *an unlimited supply*, at intervals of from one and a half hours during the day, and three or four hours at night, provided it be sucked from a teat. Upon this simple fare, we have seen children grow up in the plenitude of health and strength. If the food be as thin as we have described, no evil can arise from over-feeding: and by allowing an interval to elapse between the times of feeding, digestion goes on better, and fretfulness is averted. To weak or scrofulous infants, the addition of a little mutton suet is good, or the same benefit may be obtained by giving two teaspoonfuls of cod-liver oil daily. Oatmeal, and all farinaceous foods, are unsuitable and unnatural for the first two months, and are certain to induce fits of feverishness and griping pains. After the second month, rusk, melted down in the sweetened milk and water, is useful; but the food must still be thin, and sucked from a teat by the infant. The exertion of sucking is, for many reasons, very salutary.—*Association Med. Journal, Aug.* 12, 1853, *p.* 714.

151.—*Dissection of a Portion of the Uterus and Placenta.* By Drs. Winn and Gall.-[These gentlemen were enabled to make this dissection through the kindness of Mr. Edward Snell. By this investigation the theories of Goodsir and other modern observers, and to a great extent that of the immortal Hunter, with regard to the placental circulation, would seem to be established.]

Under a power magnifying 270 times, the following facts were clearly manifested:—1. That the falciform duplicatures of the sinuses contained not only parallel, but *transverse muscular striæ,* indicating a high degree of contractile energy. As these bodies are situated at the openings of the sinuses, they must exert a powerful influence in arresting the flow of blood when the placenta is separated from the uterus. 2. That many of the delicate filaments which are seen passing from the placenta to the uterus, when these bodies are gently separated, are composed of looped capillaries, enclosed in a fine nucleated membrane. This membrane is probably a continuation of the chorion. These loops, form as it were, villi, and project, but do not open into the sinuses. They corresponded exactly with the description given of them by Goodsir. 3. That the tissues of the placenta presented numerous oil-globules, showing that the organ had fulfilled its destiny, and that it was, in fact, *effete,* and soon about to be thrown off in the same manner as a ripe seed-vessel is separated from the parent plant. Dr. Winn, in conclusion, stated that the placental circulation was a difficult question, and had given rise to a variety of conflicting opinions; he, however, considered that modern research had established many facts, and that it could now be safely inferred that the maternal blood entered the placental cells by the curling arteries of the uterus, and that into these cells the placental tufts projected. From these cells the blood is returned by the uterine veins without having left the maternal blood vessels. The fœtal tufts are therefore merely bathed in the blood of the sinuses, and the blood of the fœtus is purified by a sort of action similar to that which takes place in the branchiæ of fishes.—*Lancet, June* 11, 1853, *p.* 547.

152.—ON THE PATHOLOGY AND TREATMENT OF LEUCORRHŒA, BASED UPON THE MICROSCOPICAL ANATOMY OF THE OS AND CERVIX UTERI.

By Dr. W. Tyler Smith, Physician Accoucheur to St. Mary's Hospital.

[Dr. Smith believed that a microscopical examination of the various leucorrhœal secretions in different cases would account for the many discrepancies upon the subject. The results of the examination were not so satisfactory as could have been wished.]

The opaque, curdy, and creamy discharge found lying upon the surface of the vagina and the external portion of the cervix uteri, seems to the naked eye widely different from the viscid, transparent secretion seen issuing from the cervix uteri. Yet, under the microscope, both were found to consist of nearly the same elements, namely,—mucus or pus globules and epithelial particles, involved in a thick tenacious plasma. The only difference appeared to be in the relative quantity of squamous epithelium and mucous corpuscles. In the vaginal secretion the epithe-

lium was in greatest abundance, while mucous corpuscles were in excess in the secretion from the canal of the cervix. It was evident, however, that the physical qualities of the discharges did not depend upon these variations, as the opaque, curdy, and the transparent viscid secretions were sometimes quite identical in their microscopical appearances. It became, therefore, an object to ascertain the precise structures which secreted these discharges, and the causes which modified their sensible and microscopical appearances.

[Dr. Smith lays great stress upon the value of the assistance he has received from Dr. Hassall and Dr. Handfield Jones, the former assisting him in the examination of the anatomy of the os and cervix uteri, and the latter, in that of a large number of specimens of leucorrhœal discharges. The os and cervix uteri present a very large surface for the purpose of glandular secretion. Dr. Smith regards the cervix uteri to be an open gland, and supposes it to be the principal seat of leucorrhœa.]

I may here refer to a point which should not be lost sight of, bearing as it does upon the pathology and treatment of leucorrhœal affections, namely, the great similarity which exists between the skin, and the mucous membrane of the vagina and the external portion of the os and cervix uteri. The resemblances of the mucous membrane in these situations are certainly much nearer to the cutaneous structures than to the mucous membranes of the more internal parts. This is particularly the case with respect to the dense epithelial layer of the vagina and os uteri; and the villi of the os uteri are, perhaps, more nearly allied to the papillæ of the skin than to the villi of the intestinal mucous membrane. These analogies are strongly confirmed by what is observed of the pathological conditions to which these parts are liable, and by the effects of therapeutical applications. It is well known that when inversion of the vagina occurs, as in procidentia uteri, the secretion of mucus is arrested, and the epithelial layer of the vagina becomes hard and similar to epidermis.

The epithelium found upon the follicular surface of the canal of the cervix uteri is cylindrical or dentated, like the epithelium just within the os. It is also ciliated low down in the cervix, and this character is continued into the cavity of the fundus uteri. The villi found in this portion of the cervix are covered by the dentated epithelium, just as in the case of the villi of the lowest part of the cervix. Mixed with the epithelium of the follicular surface of the cervix, a considerable number of caudate corpuscles are frequently found, each of them having a distinct central nucleus.

Thus it appears that the epithelium of the os uteri and external portion of the cervix is constantly squamous; that the epithelium just within the os uteri is cylindrical but not ciliated; and that in the rugous portion of the cervical canal the cylindrical epithelium becomes ciliated. Various opinions have been held respecting the situation in which the squamous epithelium becomes changed for the cylindrical, and also respecting the point at which cilia are first found. The above is the result, however, of the examination of the numerous uteri, made as early as possible after death, so as to anticipate the alteration of the cilia and epithelium by post-mortem changes.

The normal mucus secreted by the glandular portion of the cervix is

extremely viscid and almost transparent. It adheres to the crypts and rugæ so as to fill the canal of the cervix. It consists chiefly of mucous corpuscles, caudate corpuscles, minute oil globules, and occasionally dentated epithelium, all entangled in a thick tenacious plasma. The tenacity of the plasma is so great that the mucous corpuscles and epithelial debris are arranged in strings within the fluid, and even individual corpuscles may be elongated by pressure upon the plasma, under the microscope. The mucus found at the lowest part of the canal of the cervix is thinner than that belonging to the glandular portion of the cervix, a circumstance which may perhaps be owing to the secretory action of the large number of villi within the margin of the os.

The mucus found in the upper part of the vagina, as the proper vaginal secretion, is no doubt chiefly secreted by the villi and epithelium of the upper extremity of the vagina and of the os uteri and external portion of the cervix.

The vaginal mucus, as first secreted, is pearly and semi-transpurent, containing numerous curdy particles, which, when they accumulate to any considerable amount, give it a creamy appearance. Examined microscopically, the mucus of this situation possesses nearly the same characters as the mucus of the cervical canal, except that it contains, as already mentioned in a former part of the present paper, larger quantities of squamous epithelium and epithelial debris. The only other essential difference is that the first is in the normal state invariably *acid*, while the second is always *alkaline*. It is to this chemical difference, and not to the preponderance of epithelium or mucous corpuscles, that we must look for the cause of the different outward appearances presented by vaginal and uterine mucus.

The use of the cervical mucus is probably two-fold. In the first place it closes the cervix uteri and defends the cavity of the fundus from external agencies as completely as though it were a shut sac. In the second, it probably affords a suitable medium for the passage of the spermatozoa into the uterine cavity.

The last number of the 'Cyclopædia of Anatomy and Physiology' contains an article on the Vesiculæ Seminales, by Mr. Pittard, in which he suggests the hypothesis "that the office of the vesiculæ is to secrete and keep in store a mucus of such a nature as is congenial to spermatozoa." Now, the secretion of the vesiculæ seminales, like the secretion of the cervix uteri, is visced, transparent, and alkaline. The spermatozoa are deposited at the os uteri, and there can be no doubt that where impregnation takes place some days after the completion of menstruation, the spermatozoa have to make their way through the plug of mucus, filling the cervical canal, and it is a plain inference that this mucus must be adapted for their ascent to the cavity of the fundus uteri. In this progress, the movement of the spermatozoa themselves and the action of the cilia of the cervical canal no doubt contribute.

In pregnancy, the whole of the transverse rugæ and the follicular structures of the cervix are considerably enlarged, and a thick plug of viscid mucus is secreted in the early part of pregnancy, which continues to seal the os uteri during the whole of gestation, until it is removed at the beginning of labour. Sir Charles Clarke was of opinion that the

cervical mucus was not secreted at any other time than during pregnancy, but this is clearly a misapprehension. In many cases there is, throughout pregnancy, a very considerable excess of the cervical secretion, which may occur at this time without any marked local or general derangement, while in other cases, the filling up of the cervical channel seems to be the measure of the healthy activity of the glandular surface, there being little or no discharge of mucus from the cervix into the vagina during the period of gestation. The profuse secretion of mucus, which lubricates the os uteri and the vagina, during parturition, is probably derived not from the vagina, but from the follicles of the cervix uteri.

From a consideration of the structure of the different parts of the utero-vaginal mucous membrane, and the facts connected with leucorrhœa, it is impossible to do otherwise than form the conclusion, that the grandular portion of the cervix uteri is the chief source of the discharge in the most common form of this malady. This has often been suspected to be the case to a great extent; but it could not be asserted as a positive doctrine until the minute examination of the glandular structure of the cervical canal had been made, nor until the proof of the absence of any other follicular or secreting surface adequate to the pouring out of a profuse leucorrhœal discharge, had been obtained.

Leucorrhœa, in its most simple and uncomplicated form, is, then, the result of a morbid activity of the glandular portion of the cervix. A follicular organ, which should only take on an active condition at certain intervals, becomes, from a variety of causes, constantly engaged in secretion. Instead of the discharge of the plug of mucus at the catamenial period, an incessant discharge is set up. In the first instance, the leucorrhœal discharge consists of nothing more than an unusual quantity of the elements found in the healthy mucus of the cervix. Quantities of mucous corpuscles and oily particles, with particles of epithelium entangled in the viscid alkaline plasma, which gives the mucus its clearness and consistence, are found. The mucus is seen at the os uteri, extending, in the form of a string, through the vagina to the os externum, and also adhering to the walls of the vagina in the curdy or creamy state, produced by the vaginal acid. This form of leucorrhœa is to the cervix uteri what menorrhagia is to the cavity of the fundus uteri.

The quantity secreted daily is sufficient, in severe and continued cases, to prove a serious drain to the constitution; and the glandular cervix becomes, in some instances, so excitable, that any unusual stimulus provokes a sudden flow of mucus. The relation of mental emotion to the cervical follicles becomes almost as intimate as the connection between the mind and the lachrymal glands. Any sudden mental disturbance is, in such cases, followed by a sudden secretion and discharge of mucus into the vagina.

In some cases of leucorrhœa there is no discharge from the cervix uteri, and little or no implication of the glandular cervix; but the external surface of the os uteri and the upper part of the vagina secrete a copious discharge. When the surface remains unbroken, or the mucous membrane is only denuded of epithelium, the secretion consists of a plasma, containing multitudes of scaly epithelial particles in every stage of formation, from mere nuclei to the detritus of old epithelium. This may

be called Epithelial Leucorrhœa of the vagina, as distinguished from the Mucous or Corpuscular Leucorrhœa of the cervical canal. This distinction is of use in practice, because it is in the epithelial form of leucorrhœa that astringent injections are most useful. When the morbid condition of the vagina extends deeper than the epithelium, the discharge is found to contain pus or mucous corpuscles in abundance, and it can hardly be distinguished by the microscope alone from the cervical form of leucorrhœa.

As regards the pathological condition of the mucous membrane of the os uteri and external portion of the cervix in chronic leucorrhœa, I may state that I have, with the aid of Dr. Hassall, examined microscopically many cases after death, in which abrasion or superficial ulceration, as it is termed, has existed; and the following is an abstract of the results.

The epithelium of the external portion of the os and cervix uteri and of the upper portion of the vagina may be partially or entirely removed; or there may be morbid patches in which the epithelium is here and there wanting. When, in analogous states, the epithelium has been removed in the living subject by diseased conditions, the mucous surface is of an intensely red colour from the presence of the naked villi with their vascular loops, and it conveys an impression of roughness and denudation upon examination by the speculum. To the touch the abraded surface feels erectile and "velvety," a term which has been very commonly applied to what has been considered ulceration of the cervix and os uteri. The villi do, indeed, in this condition stand out somewhat like the pile of velvet, and in some cases the villi themselves are considerably enlarged.

In other cases there is not merely loss of the dense epithelium, but the villi, both of the external surface of the os uteri and of the mucous surface within the labia uteri, are destroyed in patches. In that condition of the os uteri which, upon examination after death, would be pronounced to be undoubted superficial ulceration, the state which generally obtains is partial or entire loss of the epithelial layer in circumscribed patches, and here and there the loss or partial destruction of the villi. This gives an eaten, corroded appearance to the mucous surface. Such a condition of the os may be limited in extent, or it may be spread over the whole of the os and external cervix, and pass within the labia uteri. Sometimes small circumscribed ulcers are seen, in which the denuded, or partially denuded, villi are found surrounding the edge of the small ulcer, the area of the ulcer itself being bare of villi, or the ragged debris of villi and their vascular loops appearing at the bottom of the ulcer. These little ulcers appear commonly in eruptive disorders of the os uteri; but they represent perfectly the loss of epithelium and villi, and to a more complete extent than is found in diffused patches of diseased surface.

In one case which I examined after death, not only the villi, but portions of the lower rugæ in the glandular portion of the cervix were eaten away.

The causes which produce these pathological conditions are various. They may arise from vaginitis; from mechanical injury, as in parturition; or from inflammatory states of the os uteri, having an independent type,

though I think this is of comparatively rare occurrence; or, and which is more frequently the case, they may be caused by eruptive disorders of the mucous membrane, similar to herpes and eczema in the skin. The os uteri is frequently covered by small vesicles, which can hardly be distinguished from herpes or eczema. These eruptive conditions strongly mark the analogies between this tract of mucous surface and the skin. I have observed cases in which an occasional herpetic eruption upon the os uteri always produced herpes præputialis in the husband, showing very clearly the herpetic nature of the disorder. But by far the most common mode in which loss of epithelium takes place, is, I believe, as a secondary result of chronic irritation of, and discharge from, the glandular surface of the cervix. In my experience, it has been rare to find a morbid state of the os uteri, without the exudation of a gummy albuminous discharge from the canal of the cervix. In the case of wax models of the so-called ulceration of the os uteri, submitted to the Society on a former occasion by Dr. Murphy, I observed that in nearly all of them the artist had correctly represented the viscid cervical mucus as issuing from the os uteri. When the discharge from the cervix uteri co-exists with lesion of the os uteri, it appears to me that the *alkaline* discharge lying upon the surface of the os and external portion of the cervix, irritates these surfaces, accustomed to the presence of an *acid* secretion, and occasions the rapid shedding and loss of the epithelium, and ultimately the injury or destruction of the villi beneath. I believe this to be the true pathology of the greater part of what has been called inflammatory ulceration of the os and cervix uteri.

The loss of portions of the epithelium is so common in cases of confirmed leucorrhœa, that there must be some frequent and common cause which produces it; and it appears to me that it is more reasonably accounted for in this way than in any other. We know that the mucous surfaces, accustomed to acid secretions, are irritated by the continued presence of alkaline states, as, for instance, the stomach under the constant use of alkalies, the bladder in the secretion and retention of alkaline urine, or the urethra in spermatorrhœa. Many other facts might be urged to show that the diseased states of the os uteri in leucorrhœa are secondary to the morbid condition of the cervical canal.

The secondary character of the so-called ulcerations of the os uteri, and their dependence upon uterine catarrh, has been suspected by several writers upon uterine disease. But in the absence of a definite knowledge of the structure of the parts concerned, it was objected that uterine catarrh is not invariably accompanied by lesion of the os uteri, and that ulceration might exist without any catarrhal flux from the uterus. These reasons, advanced by Duparcque, were thought so valid and unanswerable by Dr. Evory Kennedy, that he relinquished the idea as preposterous. But I submit, that if the excessive cervical secretion be a general cause of abrasion of the os uteri, it would not be extraordinary to meet with some case in which, notwithstanding the leucorrhœal flow, the epithelium remained healthy, from the existence of greater thickness or vitality, or from the unirritant nature of the discharge, in a certain proportion of cases. I have carefully observed a large number of cases, and although I have sometimes found cervical leucorrhœa without any

marked derangement of the os uteri, I have very rarely found the os uteri abraded without the existence of disease of the glandular portion of the cervix, unless in cases of eruptive disease. I have also found in treatment, that the best way to restore the os uteri is by restraining the cervical secretion; but that the morbid state of the os uteri may be remedied again and again, with a tolerable certainty of the recurrence of the disorder, unless the cervical secretion be brought back to the healthy condition.

When the changes of structure above described have taken place in the os and external surface of the cervix, the nature of the leucorrhœal secretion is, as I have already observed, materially altered. The morbid os and cervix now secrete mucus and pus in abundance, blood globules escape from the vessels, and large quantities of scaly epithelium in every form, from mere nuclei to the perfect scales and epithelial detritus, become mixed with the secretions of the cervical glandular structure. But one circumstance is somewhat remarkable. As the epithelium of the cervical canal is cylindrical, it might have been expected that cylindrical epithelium would constantly be found in the discharge issuing from the cervix. Yet the presence of the debris of cylinder epithelium in this discharge is comparatively rare. More than this, scaly epithelium is frequently found mixed with the viscid secretion coming from the canal of the cervix. I have frequently drawn out a string of mucus from the cervix, with a long forceps, and it has almost invariably contained scaly epithelium. Whether this arises from the difficulty of obtaining any of the cervical secretion perfectly pure or not, or whether the cervix uteri has the power of imbibing particles of scaly epithelium from the os, I am not prepared to say, but the fact is as I have stated it.

The pathological results of the preceding investigation may be stated as follows:—If any division of leucorrhœa be attempted, we must recognise two principal forms of this disorder. Of these, the first and by far the most frequent is the *mucous* variety, consisting chiefly of mucous corpuscles, and secreted by the follicular canal of the cervix. The second is the *epithelial* variety, in which the discharge is vaginal, or is secreted by the external surface of the os and cervix, and consists for the most part of scaly epithelial debris. These two varieties may of course exist in various degrees of combination. As regards the morbid changes occurring upon the os and cervix uteri (the so-called ulcerations) two grades of alteration are found; one of which, and by far the most common, may be called *epithelial abrasion.* In this, the epithelium is the only structure deficient. In the second grade, the villi, and occasionally the base from which they spring, are affected by a superficial ulcerative process, which may be designated as *villous abrasion, erosion,* or *ulceration.*

I have already referred to the occurrence of eruptions upon the os uteri, a circumstance which has often been observed by uterine pathologists. But there is one state of the os and cervix uteri which is deserving of particular attention, namely, that in which the so-called ovules of Naboth occur. The vesicles which have received these absurd designations are generally considered to be obstructed mucous follicles, but they are often found in situations where mucous follicles cannot be detected; and after a careful examination of several of these cases, they appear to be rather a form of vesicular disease, having its first seat in

the deeper structures of the mucous membrane. This affection is generally attended by profuse discharge from the cervix, with a patulous and engorged state of the os uteri. These vesicles are found in the upper part of the vagina, upon the os uteri and external portion of the cervix, within the os, and upon the penniform rugæ, as high up as the summit of the rugous columns. The vesicles mature and rupture one after another, leaving ulcerated spots, which may either heal or spread over the mucous surface. They reach their greatest size at the os uteri. Sometimes they enlarge without discharging their contents, and I suspect it is in this way that vesicular polypi of the os and cervix uteri are formed. I may mention, that Dr. Hassall suggests, that the solid polypi found attached to the cervix take their rise in enlarged villi of the cervix uteri.

The covering of these transparent vesicles is a thin fibrous membrane. Their contents are a white pearly coagulated matter, in which numerous granular corpuscles, mucous corpuscles, and minute points of oily matter are found.

In the middle of the walls of the cervix, what appears to be undoubtedly obstructed mucous follicles are sometimes seen. But the appearance and contents of these are very different from the Nabothian bodies. They have the appearance and consistence of curd, and under the microscope contain myriads of mucous corpuscles, with abundance of single fat globules, and occasionally large agglomerations of oily matter.

There is another state of the os and cervix uteri in leucorrhœa of considerable importance, but which has hitherto, as far as I am aware, escaped attention. In long-continued irritation of the canal of the cervix, partial inversion of the lower part of the cervical canal may take place, causing increased pain and distress, and an aggravation of the leucorrhœal symptoms. The lower part of the canal of the cervix is frequently so inverted that it comes into contact with the vagina, and the penniform rugæ may be sometimes seen upon examination.

When the os uteri is open, and the cervix partially everted, so as to bring the penniform rugæ into view, an appearance is produced which has been considered a form of ulceration, called the "cock's comb" granulation; the serrated edges of the so-called ulcer being, in reality, the penniform rugæ presenting at the os uteri, denuded of epithelium, and with the villi florid and enlarged. The villous surface of the partially inverted cervix very much resembles the granulations of an ulcer to the naked eye, and has, no doubt, been frequently mistaken for them.

The simply open state of the os uteri, generally found in leucorrhœa, appears to me to depend, not upon muscular dilatation, as commonly supposed, but upon a development of the os and cervix caused by local irritation, and to be somewhat similar to the development of these parts in the early months of gestation.

It remains to make a few remarks on the practical deductions which may be drawn from the present investigation. The demonstration of the extensive glandular structure existing within the os uteri, at once points to the influence of constitutional causes in the production of leucorrhœa, and shows the true reason why this affection should be so common in women of strumous habit and leuco-phlegmatic temperament. It also explains the effect of the excessive glandular secretion upon the constitution; and, above all, it vindicates the importance of constitutional

treatment in this malady. It further directs attention to the more rational application of topical remedies. If, as I believe, the morbid conditions of the os uteri either depend in most cases upon eruptive disorders, having their cause in the condition of the constitution, or are secondary to the morbid flow of alkaline mucus from the cervical canal, it is evident that the profuse application of caustics, as recommended in the French school of uterine pathology, is unnecessary and unscientific. We ought not to use these measures in eruptive conditions of the os uteri, any more than we should use them in similar diseases affecting the skin. Nor should we use them in cases of secondary abrasion, from the irritation of the cervical discharge, as we should be only dealing with an effect, while the cause of mischief remained. This would leave comparatively few cases for their application. I admit that leucorrhœa of the cervical canal is sometimes cured by the use of caustics to the os uteri, but, in these cases, they seem to act as counter-irritants to the glandular structure, and thus to effect a cure indirectly. I believe I have seen cases cured by blistering the cervix with acetum cantharidis more readily than by caustic, and on the same principle. It is of little use to direct attention to the os uteri if the interior of the cervix be neglected. Any abrasion or other lesion of the os uteri may be relieved by topical treatment; but if the cervical discharge continue, the os uteri is seen to renew its morbid state again and again.

The indications of treatment which I have proved to a considerable extent in practice, arising from the minute anatomy of the knowledge of the os and cervix uteri, and the study of its pathology in leucorrhœa, appear to me to be the combination of constitutional medicines and regimen, with local applications. But it is obvious that, in the majority of cases, local measures, to be of use, must be applied, not to the vagina nor to the os uteri, but to the canal of the cervix. With respect to the common method of treatment by injections, these are of great service in vaginal or epithelial leucorrhœa, where the walls of the vagina and the external surface of the os and cervix uteri are the seat of disorder; but in cervical or mucous leucorrhœa, little good is obtained unless some portion of the injection is passed into the cervix. As the os uteri is frequently patulous to some extent, this may occur in their common use, but only to a limited extent. To make the entrance of injections into the cervical cavity more certain, I generally recommend the injection of plain water, in the first instance, to clear away the mucous plug from the os uteri, and then the use of medicinal injection. Or, as nearly all the injections used in leucorrhœa coagulate the cervical mucus, and diminish the size of the cervical plug, I direct a first injection to be used with this view, to be followed, in a short time, by a second quantity of injection, to act upon the mucous membrane of the os uteri and cervical canal. It is singular that, almost without exception, the substances used for injections in leucorrhœa have an acid reaction. In intractable cases I apply astringent solutions, such as a concentrated solution of tannin, or a solution of the nitrate of silver, or a solution of iodine, applying them directly to the canal of the cervix by a camel-hair pencil. But I am at present engaged in the attempt to determine the best methods of local and general treatment.—*Medico-Chirurgical Transactions, Vol.* 35, *p.* 377.

ON CHOLERA.

[We took some pains in our 20th volume (for July to December, 1849) to collect and arrange the many opinions on Asiatic Cholera, both as to its pathology, causes, and treatment, which were published at that time. For an interesting epitome on this subject, therefore, we refer the reader to Vol. 20, pp. 392, 441, 472, where he will gain all the information which seemed then to be known.

We now add some other opinions which have been published since the epidemic made its appearance in the present year of 1853. But we do not think it necessary again to enter into so minute an analysis as we did before, because we do not perceive that there has been any very material addition to our previous knowledge on the subject. We will, therefore, merely subjoin some of the opinions on the treatment of this disease which seem to us to be the most simple—although we must acknowledge that the difference of opinion has sometimes greatly amused us.]

153.—*Blood of Cholera Patients.*

[Dr. Wm. Robertson, of Edinburgh, Editor of the 'Monthly Journal,' draws the following conclusions from thirty-five chemical analyses of the blood taken from cholera patients in different stages of the disease:]—1st, That anemic subjects are more prone than others to attacks of cholera. We have already seen that in all the six cases composing Table I., the per-centage of globules was low. We know that during the late epidemic a large proportion of our patients were females,—that of these many were pregnant, nursing, or exhausted by uterine discharges. We know that the disease was, with very rare exceptions confined to the poor, and that the ill-fed and dissipated were its usual victims. It seems not unnatural to conclude that an impoverished condition of the blood predisposes to cholera. This consideration is calculated to increase our faith in the efficacy of sanitary means as a prophylactic against cholera. Pure air, cleanliness, abundance of wholesome food, temperance, and regular exercise, the means, in short, by which the physical powers of the body are most certainly developed, are the best securities against disease. 2d, I think that it is shown by the first three tables, that the changes which so rapidly affect the blood during cholera, are concentration of the serum and globules, from the abstrac-

tion of water, together with a proportionate loss of salts. 3d, The changes subsequently effected during the stage of reaction are far more complex. I shall only allude to the chief of these. Water seems to pass rapidly into the circulation, dilutes the serum, and causes a notable diminution in the proportion of its salts. By direct analysis it has already been shown, that the relative proportion of salts is smaller during the period of reaction than at the commencement, or during the violence of the disease. This result is, I think, fatal to any theory which proposes to explain the phenomena of the stage of collapse by reference to the deficiency of salts, and holds out no encouragement for the practice of injecting saline solutions into the veins during the algide stage. But although the dilution of the blood consequent on the absorption of fluid, explains the small per-centage of serous salts during the stage of reaction, it will not explain the undiminished amount of blood corpuscles, the increase of fibrine, and the rapid disappearance of albumen from the serum. Is the increase of fibrine connected with inflammatory processes in the lungs and kidney? Are blood corpuscles formed during returning health with great rapidity, so as to maintain their normal standard while the serum becomes diluted? How is the superfluous albumen which manifestly leaves the system disposed of? The last of these questions can alone be confidently answered. The albumen which quits the serum is, in part at least, excreted by the bowels and kidneys. It has been detected in the stools, and, in a very large number of cases, has been detected in the urine passed during convalescence. Dr. James Begbie, who, at my request, made about 100 examinations of the urine passed by my cholera patients, found albumen in about 80 per cent. of the first urines of convalescence, and in about 76 per cent. of the whole number of specimens examined. In several of the cases in which no albumen was detected, the urinary secretion had been restored for some hours, or even days, but the earlier portions of urine passed (in which we should naturally have expected to detect albumen), had not been preserved for analysis. I think that Dr. James Begbie's analyses, which he has carefully recorded and put at my disposal, prove that the presence of albumen in the urine of reaction is the rule—its absence the exception; and render it highly probable that the kidney is one of the channels by which the blood is relieved of its superfluous albumen. The restoration of the urinary secretion I have always regarded as the most important step towards convalescence. If the secretion be long suspended after the stage of collapse has given way to reaction, the prognosis is most unfavourable. The patient soon falls into a drowsy state, moans incessantly, but gives occasional indications of consciousness, by returning a short answer to questions put in a loud voice and frequently repeated. From this state I have seen few recover; it passes into profound coma, and the fatal event is sometimes preceded by general convulsions. There can, I think, be no question that these symptoms are caused by the presence of urea, and possibly of other principles, in the blood. The researches of Dr. Christison and others have made us familiar with similar symptoms, produced by a like cause, in the later stages of Bright's disease, and in certain cases of our short or relapsing fever. But in no disease has the urea been found in the blood in such

quantity as in cholera. During the reaction stage, in particular, it seems to be formed with great rapidity, amounting in some instances, as has been proved by analysis, to nearly 2 parts in 1000 of blood. The important therapeutic indications which this fact suggests are sufficiently obvious. The danger most to be feared is the formation and retention of urea in the blood. Safety must be sought in the employment of diuretic remedies, and especially of such as are believed to possess the property of expelling urea from the system.—*Monthly Journal of Med. Science, Sept.* 1853, *p.* 250.

154.—*Pathology of Cholera.*

[Dr. Sibson makes the following sensible remarks previous to his relating a case of Asiatic cholera.]—Admit that cholera, like typhus, is nothing more than the effect of a virulent principle, which at certain times, and in certain places, is carried by the atmosphere, and all the symptoms are easy of explanation, and a treatment which might almost be called rational naturally flows from the hypothesis. The vomiting and dejections are a kind of violent attempt at elimination; the blood, perhaps still charged with the virus, becomes thick from the loss of its watery parts, and the two causes (one in some degree vital, and the other mechanical) give rise to an arrest of functions, to congestion in the cerebrum, and eventual death. When the vomiting and purging are over, the patient has to contend against—first, the weakness consequent upon the loss of so much albuminated fluid; and, secondly, the remains of the virulent principle in the inspissated blood left after the loss of so much water; and if his medical attendant can keep him alive until the blood becomes more dilute, and the poison thereby less active, he will have the credit of a cure.

That the poison once admitted into the circulation causes a kind of irritation in the blood is extremely probable, and the consequence of that irritation and abnormal state is an undue activity of the veins and glands of the intestinal and gastric mucous membrane. It may thus be doubted whether diarrhœa be really and truly a premonitory symptom; one might, on the contrary, be inclined to maintain that looseness of the bowels does harm during an epidemic of cholera only so far as it tends to weaken the individual. But his diarrhœa will be as free from serious results as it is in ordinary times, if the subject do not inhale a portion of atmospheric air sufficiently charged with the virulent choleraic principle.—*Lancet, Oct.* 1, 1853, *p.* 311.

155.—*Prevention of Cholera.*

[Dr. Snow observes, that if cholera commenced with general symptoms, we should not know by what channel the morbid influence had entered into the system: as it is, however, it is quite clear from the disturbance of the alimentary canal, that the effects which follow in the course of the disease, are only the result of what has occurred in this organ.]—The exudation of the watery part of the blood into the stomach and bowels causes the faintness and sinking. The blood which remains in the vessels, being too thick to pass readily through the capillaries,

both the pulmonary and systemic circulations are impeded; hence the difficulty of breathing, the general coldness, and state of collapse. How far the cramps depend on irritation of the nerves of the alimentary canal, and how far on the want of fluidity and proper circulation of the blood is not very evident; but it is quite certain that they do not depend on any cholera poison circulating in the blood, for the cramps and all the symptoms of collapse disappear for a time on the injection of a weak saline solution into the veins, which merely replaces what has been lost by the bowels. It is evident from this circumstance that the blood is not poisoned in cholera, except in cases of secondary illness, when it becomes charged with urea and other excretory matters, owing to congestion of the kidneys. The primary and essential morbid actions of cholera being confined to the alimentary canal, it follows that the materies morbi of cholera must find access to it by being swallowed, that it must increase and multiply there, and be discharged to be a source of danger to others.

Before pointing out the precautions which these views suggest, it will be well to examine what light they throw on the progress of cholera, and what confirmation they receive from general and particular facts connected with its history. It has been observed, in all parts of the world, that nothing assists the spread of cholera more than want of personal cleanliness. When we consider how free the evacuations from the stomach and bowels of cholera patients often are, both from colour and odour; how suddenly and copiously, and with what force they are generally discharged, it is evident that the hands, both of the patient and his attendants, are liable to be soiled with them. Unless great care is taken to wash the hands frequently, and more especially before taking food, or handling and preparing the food of others, small quantities of the evacuations must necessarily be accidentally swallowed. The influence of dirty habits in aiding the spread of cholera is thus clearly accounted for. It is analogous to what occurs among house-painters in regard to lead-poisoning. Those of cleanly habits escape; while others constantly swallow a little paint with their food and become affected with colic. The scarcity of water, of course, is an obstacle to cleanliness, even when the inclination prevails; and this has frequently been observed to be connected with the unusual extension of cholera in a town or neighbourhood. The reason why medical men, and other persons of cleanly habits, who do not stay to eat and drink in the sick room, are scarcely rendered more liable to cholera by their avocations, while it often fares differently with the social visitor, is perfectly explained by the above views. It is evident, also, why the medical man can make inspections of the dead bodies of cholera patients with impunity; while they who wash and lay out the body often suffer. The medical man is certain to wash his hands after his operation, while the persons who perform the other offices mentioned, especially among the poor, are almost as certain to neglect that duty. It is obvious that, where a whole family live, night and day, in one small room, in which the cooking is done and the meals are eaten, that the food is very liable to become contaminated, in the event of a case of cholera occurring; and where several families live in one room, the risk amounts almost to a certainty.

[The cholera poison may not only act upon the system when it is taken in with the food, but when it is diffused also in a very large quantity of water. One great cause of the spread of cholera is that, owing to bad drainage, the evacuations of patients are allowed to remain on the surface contaminating all who come in contact with them; and besides by percolating through the earth, they infect pump-wells and other supplies of water.]

The measures for the prevention of cholera which are suggested by the circumstances and views above detailed, may be divided into those which can be carried out in the presence of the epidemic, and those which, as they require time, should be taken beforehand.

The measures that should be adopted during the presence of cholera are:—

1st. To take care that there is a hand-basin, water, and towel, in every room where there is a cholera patient, and to take care that they are used by the nurse and other attendants, more particularly before touching any food.

2nd. To immerse the soiled linen of the patient and his bed in water as soon as it is removed, until such time as it can be washed lest the evacuations should become dry, and be wafted about as a fine dust.

3rd. To take care that the water employed for drinking, cooking, and preparing food, (whether it comes from a pump-well, or is conveyed by pipes,) is not contaminated with the contents of cesspools, house-drains, or sewers; or, in the event that water free from suspicion cannot be obtained, to have it well boiled and, if possible, also filtered.

4th. When the cholera prevails very much in the neighbourhood, to have all the provisions which are brought into the house well washed with clean water, and exposed to a temperature of at least 212° Fahr., or to make them undergo at least one of these processes.

5th. When a case of cholera appears among persons living in a crowded room, the healthy should be removed to another apartment where it is practicable, leaving only those who are useful to wait on the sick.

6th. As it would not be practicable to clean out coal-pits and establish privies and lavatories in them, or even to provide the means of eating a meal with anything like common decency, when the cholera makes its appearance, the time of working should be divided into periods of four hours instead of eight, so that the pitmen might go home to their meals, and be prevented from taking food into the mines.

The measures which can be taken beforehand to provide against a visitation of cholera, are,—

7th. To effect good and sufficient drainage.

8th. To provide the inhabitants with an ample supply of water, which is quite free from contamination with the contents of sewers, cesspools, and house-drains, or the refuse of people who navigate the rivers.

9th. To provide model lodging-houses for the vagrant class, and sufficient house-room for the poor generally.

10th. To inculcate habits of personal and domestic cleanliness among the people everywhere.

The advice and directions which are issued respecting cholera by authority, are directed almost entirely against dirt and nuisances; but,

unfortunately, they are perfectly silent respecting that particular kind of dirt which does the mischief. The Board of Health directs its attention more particularly to offensive effluvia, as a supposed cause of cholera. When the ready means for the communication of this disease exist, it often happens, for very evident reasons, that offensive gases are not altogether absent; but it has been satisfactorily proved, that the effluvia arising from the decomposition of vegetable and animal matters have nothing whatever to do with cholera.—*Med. Times and Gazette, October* 8, 1853, *p.* 367.

156.—*Treatment by Calomel.*

[Dr. Ayre, of Hull, observes that in the epidemics of 1832, and 1849, calomel was the sole and exclusive remedy he employed. In excusing the imperfect nature of the report, he observes:]—As I have found myself obliged, from the circumstance of the disease being already amongst us, to anticipate the time when I should give the result of the communications to be made to me on the treatment, I must now content myself with giving such a report as the occasion will permit. From one of my correspondents I have received a report, in a tabular form, of upwards of eighty patients in the collapsed stage who were recovered by this treatment, and the true nature of whose disease is shown by an amount of calomel taken, which none but cholera patients in collapse could take with impunity, but which they received without any inconvenience ensuing, not more than four or five of the whole number having been affected with ptyalism, and none to a troublesome degree. It would be occupying too large a space in your columns to insert the whole of the cases, and I shall content myself with presenting twelve of them, taking them in the order in which they have been sent to me.

Twelve Cases of Cholera in the Collapsed Stage recovered by the Use of Calomel in small and frequently-repeated Doses.

First Visited.	Date of Recovery.	Number of One-grain Pills given.
A. August 14.	August 20.	50
B. ,, 27.	Sept. 8.	134
C. ,, 23.	August 31.	132
D. ,, 30.	Sept. 1.	60
E. ,, 31.	,, 9.	72
F. Sept. 1.	,, 11.	72
G. ,, 2.	,, 5.	156
H. ,, 4.	,, 7.	42
I. ,, 4.	,, 9.	43
K. ,, 5.	,, 9.	36
L. ,, 9.	,, 15.	256
M. ,, 11.	,, 13.	96

From the above table of cases, it will be found that the average quantity of calomel taken was ninety-five grains, and that the duration of the disease was brief, which corresponds with my experience, for under this treatment, the patients come from a state of disease to one of comparative health, I having on many occasions found my patients sitting at their meals with their family on the second or third day after having been in a state of pulseless collapse, so speedily are they restored when the secretion of the liver is renewed. I here subjoin the letter of my correspondent, which accompanied the cases I have copied above, and which confirms in every way my own experience in the nature and results of the treatment:—

"In answer to your inquiries, I may say that only a few were affected with *ptyalism* in the cases of cholera, and these few would not have been so but for the anxiety of patients to continue the pills when a change for the better took place. As to consecutive fever, I hardly ever knew of a case under the calomel treatment. The cases of collapse occurred before I saw these as a general rule, because if seen early, they rarely went into collapse. Stimulants were not given by me, with the exception of a few drops of ether or camphor-water. One or two drops of laudanum were given with each dose of calomel, up to twenty-four or thirty drops taken on the whole, when it was discontinued. I had an opportunity of seeing that treatment carried out to the letter in thirty-three, being at that time apprenticed to a gentleman who fully carried out your treatment."

In preparing to address you, I intended to give in detail a further report of the testimony supplied to me by various correspondents, but of the communications now before me, there is such a uniformity of sentiment in favour of the practice with calomel, and so nearly in the same terms declaring what has been given above, that I shall content myself with simply quoting a single passage from each of twelve correspondents, and alphabeted below:—

A. Calomel in the doses you mention has been given to a considerable extent; and, in my opinion, is a medicine deserving the highest praise.

B. Calomel administered according to your plan has been our sheet anchor.

C. In the stage of collapse calomel in small and frequently repeated doses is alone to be relied on.

D. A patient of mine took upwards of 400 grains, was saved, and had no soreness of the mouth.

E. We have tried every mode of treatment, and been obliged to abandon them for the calomel treatment.

F. The disease here has almost universally yielded to the calomel treatment by small and frequently repeated doses.

G. and H. We have found the calomel treatment most efficient in early stage of collapse, and when the patient had become pulseless.

I. Having seen a great deal of the cholera in 1832, and attended patients both alone and with you, I can speak in the strongest terms of the efficiency of the treatment in the stage of collapse.

K. I consider the want of success with many, by the calomel treatment, has arisen from the large doses of opium combined with it.

L. My success in the use of calomel in small doses convinces me that all who shall give it a trial will be equally convinced of its value.

M. I beg to forward you the case enclosed, as proving the power of the calomel treatment to cure the disease in its worst form.

With the foregoing extracts I shall now conclude, with the single remark that those who may object to the treatment of the cholera by calomel, on the ground that they do not understand the mode of its action, should with equal reason reject the use of quinine in intermittents, for of the mode by which that medicine acts nothing whatever is known. It is strictly an empirical remedy, yet it is nevertheless an invaluable one, and it is therefore ardently to be hoped that the testimony of so many unbiassed witnesses to the value of the treatment will not be thrown away, and that the profession of these kingdoms, in imitation of their brethren in the United States, will give it a fair trial, feeling assured, as I do, that having, like their American brethren, given it such trial, they will, like them, never desire to abandon it.—*Lancet, Oct.* 1, 1853, *p.* 321.

157.—*Treatment by Large Doses of Calomel.*

[Mr. F. W. Richardson, of Woolwich, Surgeon to the Royal Kent Infirmary, in a letter to the editor of the 'Lancet,' observes:]—A person is affected with cholera because he has a specific poison in his blood, just as others are liable to measles, scarlet fever, small-pox, typhus, &c., because they have other poisonous matters in the circulating fluid. The materies morbi produces an altered condition of the blood, attended with great prostration of strength, vomiting and purging of a serous fluid, containing soluble salines, some albumen, epithelial scales, and perhaps fibrin, and the blood thus inspissated causes congestion of the Malpighian capillaries of the kidney, with suppression of the urine, which, together with the other retained secretions, still further damage the blood.

The treatment consists in eliminating from the blood the morbid materials which are interfering with its normal condition. "There are reasons for believing that mercury occasions in the blood that dissolution of certain materials which are preliminary to their excretion;*" and, coincidentally with this change, produces increased activity in the secreting functions of the liver, the kidneys, the glandulæ of the intestinal canal, &c. We must, therefore, trust to *calomel in large doses,* uncombined with any other drug, to restore the secretions, and cure the patient. I am now speaking of collapse. Give an emetic, composed of fifteen grains of sulphate of zinc, and fifteen grains of ipecacuanha, and repeat it in ten minutes. In about twenty minutes, place twenty or thirty grains of calomel on the tongue, and repeat from two to ten grains, or more, every ten, twenty, or thirty minutes, according to the severity of the symptoms. Support the vital powers by beef-tea injections, administered every half-hour or hour. Allay the thirst and vomiting by ice or a *tea-*

* Mr. Simon, 'Lancet,' vol. ii. 1850, p. 198.

spoonful of very cold water, given *ad libitum*. Cautiously avoid all stimulants, for they have been shown to create positive mischief, and most alarming symptoms during the reaction. When the dejections again contain bile, continue small doses of calomel for a short time, and then give twenty grains of rhubarb, thirty grains of sulphate of potash, in some peppermint-water, or a castor-oil draught. Afterwards prescribe liq. am. acet. every four hours, or some carbonate of soda and tartaric acid in a state of effervescence. Then restore the strength in the way previously mentioned.

The gentleman who has been most successful during the past in managing the cholera is Dr. Ayre, of Hull, who employs small doses of calomel, combined with a small quantity of opium. He remarks,—"I have had seventy-six cases, of which sixty have been returned cured, five are under treatment, four of them are out of danger, and ten have died." Facts thus clearly prove that the calomel plan is the only rational and successful one; but I differ, however, from Dr. Ayre in several respects. I think emetics ought to be given at the onset, for they restore warmth to the surface, relieve the congestion of the internal organs, and shorten the attack. Again, it is acknowledged how necessary it is to support the vital powers, and it is on this principle that brandy is used; but beef-tea is the remedy, and as it cannot be administered by the mouth, it must be by the rectum. When the calomel is employed in *large doses*, the patient recovers more quickly, and the mortality is not so great. All severe cases of collapse under my care have recovered in *from twenty-four to forty-eight hours*. Dr. Ayre says, "the average duration of the disease in those who recovered under his treatment has not been more than *from four to five days.*" He also talks of "the greater or less occasion for the subsequent employment of leeching and the antiphlogistic remedies." I have never seen any necessity for such remedies, except when opium, brandy, chalk, &c., have been given.

I will add a few words concerning the premonitory symptoms. In my experience *painless* diarrhœa is extremely rare. The symptoms are purging, nausea, retching, sometimes vomiting; *foul and coated tongue;* pain at the stomach; often cramps in the abdomen and legs; and frequently coldness of the extremities. I would seriously ask any sensible, reflective person, if "twenty grains of opiate confection, mixed with peppermint-water, or weak brandy-and-water, and *repeated every three or four hours, or oftener,*" is "plain advice," or ought to be administered under such circumstances? I have had many cases of this kind under my care lately, and they all invariably and instantly yielded to emetics, ten grains of calomel placed on the tongue, followed in an hour's time by a rhubarb draught, which can be repeated as often as may be deemed requisite. It must not be forgotten, that it is a specific poison, often combined with putrescent organic matters, received into the blood, which occasions all the symptoms, and the quicker they are metamorphosed and discharged from the system the better.

In the epidemic diarrhœa of infants, I have found grain doses of calomel, given every two or four hours, perfectly effectual in curing the complaint. In infantile cholera, I give emetics, two grains of calomel

every ten minutes, and beef-tea injections, as often as necessary.—*Lancet, Oct.* 8, 1853, *p.* 353.

158.—*Treatment by Calomel, Counter-irritation, Astringents, &c.*

[Mr. C. A. Chavasse, of Smithwick, Birmingham, has had an extensive experience of this disease both at home and abroad. Speaking of the treatment he observes:]—I have seen every plan tried,—counter-irritation, brandy and laudanum, brandy and capsicum, cold affusion, transfusion; Stevens' saline with soda, chloride of sodium, and chloride of potash; the Australian sulphuric plan, mustard emetics, salt emetics, calomel and opium, opium and astringents, acetate of lead inclusive, calomel in large doses of one drachm every hour, and small doses of one grain every quarter of an hour, and many others too numerous to mention; some certainly with partial success, but all infinitely inferior in efficacy to the plan I am about to recommend; and which I first saw put in practice in India on a very large scale.

I have seen many hundred cases treated successfully by it; and several times forty or fifty successively. The proportion of recoveries to death was, I believe, about eight of the former to one of the latter; and to show the great malignancy of the disease before it was adopted, nearly all the cases died, often in two or three hours. Without further preface, I earnestly recommend the following:—

Warm turpentine epithegms, or mustard-poultices applied to the abdomen frequently. Take of calomel, prepared chalk, of each ten grains—make a powder—to be taken every hour in treacle, with half an ounce of the following mixture:—Take of compound powder of chalk with opium, powdered acacia, white sugar, of each, two drachms; sesquicarbonate of ammonia, one drachm and a half; cajeput oil, twenty minims; tincture catechu, three drachms; camphor mixture, eight ounces; mix. The above to be given until the evacuations become feculent—generally from twelve, sixteen, or twenty doses—and then the following substituted until the purging be quite stopped. Take of acetate of lead, half a drachm; strong acetic acid, half a drachm; Battley's sedative solution of opium, fourteen minims to one drachm; oil of cinnamon, four minims; tincture of ginger, three drachms; infusion quassia, to eight ounces: mix. An ounce to be given every two hours. Afterwards, decoction of bark, with dilute sulphuric acid, may be given. It is of the greatest importance that the calomel be of the *lightest* description, and triturated for a *long time* with the chalk.

The strength of the patient must be supported by giving, alternately, strong beef-tea spiced with pepper-corns and seasoned with salt, and arrow-root and milk with brandy and nutmeg between each dose of the medicine.

Cold water may be allowed ad libitum.

Flannel should be worn next the skin.—*Lancet Oct.* 8, 1853, *p.* 355.

159.—*Treatment by Sulphur.*

[Mr. JOHN GROVE, of Wandsworth, believes the antidote and remedy against cholera to be sulphur. This belief, he says, has been tested by Mr. Blacklock in India, Dr. Bird in America, himself in England, and by the peasantry in Scotland. He does not say it is an infallible remedy, but he believes it to be of equal value to quinine in ague, or mercury in syphilis. He says,]—The value of a remedy depends much on the manner in which it is administered. The plan I have adopted is the following:—A mixture of twenty grains of sulphur (the pure precipitated), twenty grains of sesquicarbonate of soda, two drachms of compound spirits of lavender, and water sufficient to make up six ounces: a fourth part of this is given every two or three hours in ordinary diarrhœa, and it very rarely fails to cure at once if hot fluids and vegetables are discarded from the diet. If the disease has advanced to vomiting, the dose is repeated every quarter of an hour until the medicine is retained on the stomach, which generally happens after the second or third dose; the intervals are then prolonged according to circumstances. The same rule is observed when the spasmodic form of the disease occurs, and with equally favourable results. When diarrhœa has preceded the treatment for some days, I have found it useful to add five minims of tincture of opium, or sometimes ten, to each dose of the sulphur mixture, in order that the sulphur may be retained and absorbed, upon which I believe success to depend.—*Lancet, Sept.* 3, 1853, *p.* 304.

160.—*Treatment by Sulphuric Acid.*

[Dr. H. W. FULLER, Assistant Physician to St. George's Hospital, observes that it was not until September, 1851, that he had an opportunity of testing the efficacy of the newly introduced remedy, sulphuric acid. He says:]—In that month, two most urgent cases of choleraic diarrhœa, attended by extreme collapse, violent and incessant cramp, pinched features, rice-stool evacuations, and matters resembling chicken broth rejected from the stomach, were admitted about the same time into St. George's Hospital. Had these cases occurred in the autumn of '49, they would have been designated cases of Asiatic cholera; they differed in no respect from genuine cholera, and were entitled cases of choleraic diarrhœa simply because cholera was not then prevalent as an epidemic. In both these instances I administered sulphuric acid with complete success; and as the action of the remedy could be attested by pupils and others, who witnessed the success of the treatment, I published in the 'Medical Times and Gazette,' (January 10, 1852,) a detailed account of the effects observed, together with the general result of my experience. It amounted to this,—that the dilute sulphuric acid of the Pharmacopœia, administered in half-drachm doses, repeated at short intervals, has a powerful and immediate influence over the disease. The vomiting and purging cease, and the cramps subside, sometimes after the second, more usually after the third or fourth, dose of the medicine. The attack may leave the patient weak, and usually does so, in proportion to its severity, and the length of time which has elapsed before the administration of the remedy is commenced; but, within three or

four hours, the disease is arrested, and convalescence follows speedily. Indeed, in ordinary cases, the change is effected with such marvellous rapidity, that he who in the morning is utterly prostrate, in the evening experiences little ill effect from his fearful seizure.

I had hoped that this circumstantial report, backed as it was by the result of my own experience, extending at that time to twenty-seven cases, and as it has since been by the concurrent testimony of several practitioners in different parts of the country, would have led to a recognition of the extreme value of this treatment in all instances of choleraic diarrhœa, if not of cholera; at all events it seemed but fair to presume that testimony so decided, in favour of a remedy so cheap, so harmless, so extremely simple, so uniformly successful, and producing its successful and striking results within so short a time of its administration, would at least have insured a trial of its virtues. But, unfortunately, the profession clings so rigidly to routine, that comparatively few have been induced to employ it, and thus its virtue as an anti-cholera specific remains almost unknown or disregarded. To give large and repeated doses of calomel, or opium, or cajeput oil, or chalk, or brandy, to employ saline injections into the veins, to wrap the patient in bran or mustard poultices, or to have recourse to one or all of the many expedients which are often resorted to in severe cases, has certainly a much more imposing effect, and is a proceeding more strictly "selon la régle," than the simple administration of sulphuric acid; yet, when it becomes known that the latter mode of treatment, albeit simple and unpresuming, effects its purpose perfectly, sometimes within one hour, usually within two, and always, I believe, within four hours; whereas the former, even when successful, (and that it is often unsuccessful the Registrar General's Reports sufficiently attest,) requires many hours for the accomplishment of the same object, and leaves the patient in a state requiring as many days for recovery, it cannot be much longer a question as to which method of treatment shall be adopted. This is a matter in which, if the profession will not act, the public will certainly take the initiative. If once it becomes known that a halfpenny-worth of acid is more than sufficient to effect a cure,—that the acid, when properly diluted with water, is so harmless, that it is not unfrequently drunk as a lemonade during the hot weather in the south of Italy, and, throughout the Continental states, is served out in accordance with a police regulation, as a daily beverage to all persons engaged in the manufacture of white-lead, it will not be long before a bottle of the dilute sulphuric acid of the pharmacopœia is duly installed in every housewife's medicine cupboard. The profession have yet time to take the matter into their own hands; but, if they do not soon avail themselves of their privilege, the public will assuredly step in, and deprive them of the opportunity.

My own conviction is, that in sulphuric acid we have an antidote—a specific—against choleraic diarrhœa, if not against the worst forms of cholera, as powerful, as energetic, and as certain in its effect, as is cinchona bark, or quina, against a paroxysm of ague. In bilious diarrhœa, and in certain chronic diarrhœas, it is of little or no avail; and, in some, though in very few, according to my experience, it gives rise to pinching pain in the abdomen; but in epidemic diarrhœa, in acute autumnal

diarrhœa, if I may so term it, and in more decided choleraic diarrhœa, I have known no single instance of its failure; indeed, the more choleraic the diarrhœa, the more speedily are its curative effects produced. This fact will appear of greater value when it is known that I have notes of its administration in above ninety such cases, many of which have occurred among my own patients at the hospital or elsewhere, and some in the practice of my friends.

With this, however, even more than with the other remedies, success depends upon the mode of administration. Given at intervals of three or four hours, it fails in exerting any curative influence in severe cases, and is seldom of much avail even in milder cases; and to insure its beneficial effects, it should be exhibited in full doses, repeated at much shorter intervals. When I first began to give it, I ordered two doses to be taken within the first hour, and a dose to be repeated every hour afterwards. But recent and more extended experience, together with the close and eager observation of its influence on my own person, has convinced me that, even in ordinary cases, twenty minutes form a sufficient interval between each dose. In severe cases, five or six doses may be given with advantage within the hour; and should any dose be rejected by the stomach, another should be administered at once.* Rarely, however, is any dose rejected except the first, and the rejection of that is by no means common. While loathing the sight of other liquids, the patient, after he has tasted the first dose of the medicine, very generally craves for its repetition, and drinks it with avidity.

As the stomach is very irritable, and the acid taken in simple water is, under the circumstances, extremely palatable, I never mix it with syrup or other matters; and I strongly suspect the warm aromatic spices, with which some of my friends have flavoured it, are additions by no means agreeable to the patient. Unfortunately I have had some personal experience in this matter, and so strongly was my distaste to the medicine excited by such flavourings, that for the future, whenever I am the patient, I shall certainly put my veto upon them.

The effects produced by this remedy are very remarkable. Sometimes, after the second dose, more commonly after the third, and almost always after the fourth, dose of the medicine, the patient experiences a grateful sense of warmth at the epigastrium; heat returns to the extremities; the nausea and vomiting immediately cease, even if they have not been arrested already; the purging is stayed, the cramps subside, and the countenance re-assumes its natural appearance. Very generally, perspiration breaks out, and the patient goes to sleep, and awakes refreshed;

* Mr. Buxton, of Great George-street, Westminster, to whom the Profession is greatly indebted for having been the first to call attention to the anti-choleraic properties of sulphuric acid, recommends the administration of half-drachm doses every quarter of an hour in severe cases. If those gentlemen who make trial of the remedy so strongly recommended by Mr. Buxton would use it as they ought, in the manner and in the dose he directs, and administer it only in proper cases, we should seldom, if ever, hear of its failing to arrest the course of the disease. In every instance within my own knowledge in which it has failed in its efficacy, the blame has been chargeable upon those who have administered it, rather than upon any want of virtue in the remedy itself. They have either given it in insufficient doses, or else in cases of bilious diarrhœa, with foul breath and loaded bowels, which would have been benefited by a brisk purge of calomel and rhubarb.

though feeling somewhat weak. The other symptoms betoken a like amendment. The tongue, which before was dry and furred, or shrivelled, becomes moist and but slightly coated; the evacuations from the bowels assume a healthy colour, and are accompanied by an unusual discharge of bile; and the pulse regains its normal steadiness.

Such being the case, it is unnecessary, in mild or ordinary instances, to have recourse to any further treatment. With due precaution as to over-exercise and fatigue, and strict attention to the amount and nature of the diet during the next few days, so as to allow the stomach to recover its wonted energy before its powers are again fully taxed, the patient usually recovers without let or hindrance. The bowels act regularly without the assistance of medicine, and the dejections are of a healthy colour and consistence. But in severe cases, if care be not taken to maintain the good effects already produced, a relapse may occur, or recovery may prove tardy. The patient, though no longer troubled with diarrhœa, may digest imperfectly, and suffer greatly from nausea. For some time after these severe attacks, the secretion of bile takes place irregularly, and the bowels become costive or irritable, and the motions dark-coloured and offensive. Hence it is sometimes expedient to follow the sulphuric acid by two or three grains of blue pill, or a grain of calomel, administered at bed-time for a few successive nights, taking care during the day to impart tone to the stomach by the exhibition of some light bitter infusion, combined with potash and ammonia, small doses of tincture of rhubarb, and, if necessary, a little chalk. By some such means as these, all unpleasant after-symptoms are prevented, and the patient proceeds steadily to convalescence.

On several occasions, it has occurred to me to try whether the same effects might not be produced by continuing the administration of sulphuric acid at intervals of six or eight hours. But the result of the experiment has not been encouraging. In some few instances the patient has improved steadily, but occasionally he has experienced a relapse, and has generally been longer arriving at perfect health than under the plan already indicated. Hence, as soon as the urgent symptoms have been subdued—*i.e.*, after the first few hours—I usually discontinue the acid, and, if necessary, have recourse to the treatment above recommended as most conducive to the maintenance of its good effects.

For some time after a severe attack, strict attention to the diet is of the utmost importance. The food should be light and nutritious, taken in smaller quantity than usual, and at regular intervals. As a general rule, everything which is "bilious" disagrees with the stomach: but perhaps nothing produces derangement more certainly than malt liquor. I have tried every kind of beer, both in bottle and on draught, on myself and my patients, and almost uniformly with bad results. Excellent as bitter ale proves as a stomachic under ordinary circumstances, it usually produces a strange commotion after one of these attacks. No beverage should be employed except water, accompanied by a due allowance of wine, or, if necessary, a little brandy. Fruit and vegetables should be altogether avoided.—*Med. Times and Gazette, Oct.* 1, 1853, *p.* 344.

161.—*Treatment by Bicarbonate of Soda and Opium, called "Maxwell's Remedy."*

[Dr. Cameron, 37th Regiment, writing to the 'Medical Times and Gazette,' states that Dr. Maxwell, of the Madras Cavalry, used to prescribe a mixture of bicarbonate of soda and opium in cases of this kind. It obtained such a notoriety that it was termed "Maxwell's remedy." Dr. Cameron was led to use the form from the remarkable effects it produced in a case very nearly approaching to true cholera.]—The proportions are as follow:—A scruple of sesquicarbonate of soda, with three grains of opium, given in the form of bolus, and washed down with a second scruple of soda in a wineglassful of water *as hot as the patient can bear to swallow it.* This to be repeated in the evening, with two grains of opium if necessary, and afterwards in diminished doses if required. I have never found it necessary to give a second bolus when the first was retained, and sometimes have succeeded in stopping the vomiting by the hot draught with laudanum when the patient could not keep down any bolus. This was the case in the cholera patient alluded to, who was admitted at Colombo, on the 15th of July, with blue skin, shrivelled hands, and weak voice, after vomiting and purging all night.

On our arrival here, and during the hot weather with cold nights in March, we had about a dozen cases of men brought into hospital, many of them off guard, in a state of great exhaustion from vomiting and purging, having generally had diarrhœa for twenty-four hours or more previously. None of them were exactly cases of cholera, but they very closely approximated to it, having cramps and great coldness of skin. In every instance, "Maxwell's dose" was immediately given, and acted like a charm.—*Med. Times and Gazette, Oct.* 8, 1853, *p.* 365.

162.—*Treatment by Quinine, &c.*

[The Editor of the 'Medical Times and Gazette' observes that the lesson we may learn from the experience of the past, is not to persevere in modes of treatment which have proved useless. He remarks]—Of all the remedies used during the previous epidemics, with the exception, perhaps, of opium as a palliative in certain stages, quinine probably is most deserving of a further trial. Modern experience in India is leading to increasing confidence in its powers. Towards the close of the epidemic of 1849, it was used in London. Mr. Spencer Wells injected a solution into the veins in four cases. Dr. Parkes did so in two others. He also injected solution of salicine without any marked effect, besides alcohol, both in simple warm water and in saline solutions. The experiments were only made in desperate cases, and no recoveries followed, but the power and duration of the reaction which took place were very remarkable, and, as phlebitis only followed in one case, encouragement is afforded for a repetition of the trials in cases not so absolutely hopeless as those in which they were formerly made.—*Med. Times and Gazette, Oct.* 8, 1853, *p.* 376.

163.—*Treatment by Saline Injections.*

[Dr. G. Owen Rees, F.R.S., observes on this method of treatment:]—

As the cholera has again visited this country, I venture to direct the attention of the profession to a point of considerable importance as respects the application of one of the remedies for the disease. With the view of recovering some of the worst cases, and when other remedial means have been unsuccessfully tried, practitioners have occasionally injected saline fluids into the veins. As this proceeding has been attended with great advantage in several recorded cases, and has produced in nearly all a temporary good effect, it has appeared to me that had the injected fluids been composed in more strict accordance with the chemical and physical constitution of the blood than was the case, we might have obtained advantages from the injections very far exceeding those we have on record.

With regard to the chemical constitution of the fluid, it would appear that we can scarcely venture to interfere with the organic constituents of the blood, nor imitate the animal extractives and protein compounds of the circulating fluid, in order to supply them if deficient. There is, however, no occasion for this in Asiatic cholera, for the evacuations from the intestinal surface, which destroy the healthy characters of the blood in that disease, appear to contain but little organic matter, being chiefly made up of water holding the salts of the blood in solution. Thus Vogel and Wittstock agree in describing cholera motions as containing intestinal mucus, traces of albumen, and the ordinary salts of the blood, with carbonate of soda somewhat in excess. The analysis of cholera blood again points clearly to the necessity of supplying more especially salts and water, if we desire to restore it to the healthy standard.

With these facts before us, it is obvious that if we inject the veins at all, a solution of the salts of the blood is indicated in the cases of Asiatic cholera: and it would seem well that those who may think it advisable to have occasional recourse to that plan of treatment for the recovery of severe and advanced cases, should keep a mixture of saline ingredients, combined in the proportions (or as nearly so as possible) observed in healthy blood. In order to answer the above requirements, I would recommend the following powder to be prepared, and kept ready for solution:—Chloride of sodium, three ounces; phosphate of soda, one ounce; carbonate of soda, one ounce and a half; sulphate of soda, half an ounce.

As regards the physical peculiarities of the fluid for injection, it is quite as important that its characters in this respect should be attended to as that its chemical constitution should bear its proper relations to the blood. The specific gravity and temperature of the injection will require to be carefully adjusted before we can expect to put our patient under the conditions most favourable for recovery when mixing it with the blood. With regard to temperature, but little need be said; 98° Fahr. is necessary, as being that of healthy blood; and I would only remark, that it should be determined by a correct thermometer, and not by one of those cheap instruments with which the market is just now unfortunately inundated. The specific gravity should be adjusted by gradually diluting a strong solution of the saline mixture above described with small portions of distilled water, at the temperature of from 58° to 63° Fahr., occasionally testing it with a saccharometer, (the ordinary

instrument used in the examination of urine,) until the instrument indicates a specific gravity of 1030. This being attained, the fluid has merely to be brought to the temperature of 98° Fahr. to fit it for use.

It is not my intention to enter, on this occasion, upon the reasons why it is so absolutely necessary to attend to the specific gravity of the injected fluid, further than to state that I have adopted that of the serum of the healthy blood, which has a specific gravity such as acts on the blood corpuscles by producing a gradual endosmosis, and thus avoids the evil effects which solutions varying much from the same weight inflict on those bodies.

In conclusion, I would beg to refer those who may be interested in this question of the effects produced on the blood by solutions of varying specific gravity, to a paper by Mr. Samuel Lane and myself, contained in the thirteenth number of the 'Guy's Hospital Reports,' and also to remarks having reference to the physical structure of the blood, contained in the second edition of my work on the Blood and Urine.—*Lancet, Oct.* 1, 1853, *p.* 313.

164.—*Treatment by Enemata of Tincture of Catechu, &c.*

[Mr. A. J. J. Chitty states that in 1847 the cholera broke out in the 37th regiment, (about 1100 strong,) stationed at Colombo, in Ceylon. Mr. Chitty was one of the surgeons in attendance. The mortality was by no means equal to the general rule, being only about one death to four and three-quarter recoveries. Mr. Chitty believes this to be due to the peculiar treatment adopted. He says,]—On post-mortem examination of the fatal cases, we were struck with the uniformly turgid, erected, and prominent condition of the villi of the intestinal canal, and of its grandular system generally, and there were frequent incipient ulcerations of Peyer's patches and the solitary glands, in cases, however, rapidly fatal. It appeared to us that we required some medicament that would exercise a powerful astringent effect on these villi, extended throughout their location. Strong decoction of catechu seemed to offer this provision, and on that our successful treatment mainly depended. Enemata to the amount of two washhandbasinfuls were administered continuously, after a first or second trial with smaller quantities, until abdominal distension obliged us to desist from its injection, and in more than one instance was it in part evacuated by the mouth, proving that it had traversed the intestinal canal. Laudanum, turpentine, ether, ammonia, &c., were severally conjoined, according to the circumstances of each case, and the condition of the patient. The decoction was taken too by the mouth with laudanum; indeed it was required that all soldiers affected with the least diarrhœa were to be brought to the hospital to be placed under surveillance, and to commence the catechu. Its value was so esteemed, that many of the officers, as well as men, would come daily to request the nauseous draught as a preventive of the epidemic. The various systems of treating cholera recommended by different authors had a fair trial at our hands,—salines, calomel, creosote, cajeput, &c., (excepting the acid sulphuric oil, which did not at the time strike us as an appropriate remedy), but were all laid aside for catechu in the urgent

stages of the disease. The action of sulphuric acid I believe is in the main similar to catechu, inasmuch as its chief property and value in cholera would depend on its astringent action in the capillaries; but to effect this it must enter the circulation, and whereas at this juncture digestion and absorption are almost effectually interrupted, the exosmotic principles being in the ascendant, it would seem to yield a precedency to the external topical astringent, catechu. I never saw calomel of the slightest benefit, nor can I imagine upon what deductions it is administered in the urgent stage of cholera with a hope of being useful.

The intense burning pain felt in the epigastrium and the vomiting I have observed are best relieved by spirits of turpentine applied as hot as can be borne to the stomach, and iced drinks, especially champagne, which, too, has the advantage of being a less powerful stimulant than brandy. The administration of stimulants in excess in this disease I have found fraught with danger; it excites or restores too rapidly the force of the circulation, and thus allows a continued or more copious exudation of the serum of the blood; it is invariably followed by increased vomiting or purging. The inhalation of ether was tried at Colombo at this period, to relieve the muscular spasm, with questionable success; but in some instances its administration was followed by a remarkable and happy restoration of cuticular warmth, increased force and fulness of the pulse, sleep, and convalescence. Chloroform was unknown to us, and our inhaling apparatus (a truly military one!) almost worthless, or I could have written more confidently of the value of the anæsthetic.

I would also beg to mention that in one instance I was permitted to inject the venous system with a warm alkaline solution, (sesquicarbonate of soda with warm water), by means of an anatomical injecting syringe. It was effected through the external malleolar vein, in a soldier already *in articulo mortis,* the pulsations of whose heart were only discernible by the stethoscope. In a few seconds the pulse returned to the wrist, the respiration become accelerated, warmth was restored to the surface of the body, and animation became so far perfected that the soldier rose up in bed and spoke, but instantly an excessive vomit occurred, and he fell back and died. I was not allowed to repeat the experiment, but I have since thought that had the injection been adopted earlier in the period of his existence,—had it been done a little more slowly, cautiously, and not so excessively, (for I injected nearly a gallon),—the result might have been successful, and a valuable lesson gained. I am, however, so impressed with the force of that experiment, that on convenient opportunity, and friends permitting, I would not, as a *dernier ressort,* hesitate to repeat it.—*Lancet, Sept.* 24, 1853, *p.* 282.

165.—*Treatment by Chloroform Inhalation.*

[Mr. G. H. Heath, of Newcastle-on-Tyne, remarks that we sometimes meet with cases of cholera in which, although the symptoms are by no means malignant, yet the vomiting is excessive; and that chloroform inhalation is admirably adapted for such cases. In the following case the most obstinate vomiting had existed for twenty-four hours, and the patient was rapidly sinking into collapse.]—Without the slightest

effect I tried successively hydrocyanic acid, chloroform in spirits of wine—which have been much employed here—morphia, and bismuth. I sat with him for some time watching him, and found that whatever was introduced into the stomach, whether medicine, food, or cold water, was instantly rejected; so that it was impossible that any drug given in the ordinary way could produce its effect. I then determined to try the inhalation of chloroform, after the following manner. First, I caused him to inhale a small quantity of the vapour, sufficient merely to quiet the stomach for the moment, without producing insensibility; he was then got to swallow half a grain of morphia, and immediately was put fully under the influence of chloroform, and kept so for a few minutes; when sensibility returned, he declared himself free from all feeling of sickness. He was then kept sufficiently under the influence of chloroform to prevent vomiting, for an hour and a quarter. When this time had elapsed, he became drowsy, the inhalation was discontinued; he slept for some time, and remained entirely free from sickness for twenty-four hours. Afterwards he had a slight return of vomiting, which was checked in the same way. He has now, except on one or two occasions, for several days continued free from vomiting, and appears likely to recover.

The principle of this mode of treatment is, to keep the stomach quiet by the inhalation of chloroform, until some powerful anti-emetic medicine has had time to affect the system; and from my experience of it, I should most strongly recommend its adoption.—*Lancet, Oct.* 15, 1853, *p.* 378.

166.—*Treatment by External Stimulants.*

[Mr. T. M. Greenhow says:]—It appears that in the most desperate cases, even when life has appeared extinct, the native Indians are accustomed to apply the actual cautery freely to the abdomen, not unfrequently with the happy result of restored vitality. The remedy, based on the same principle, which I have employed in three cases with complete success in the Borough Gaol of Newcastle, is precisely similar in kind, though somewhat less harsh and formidable in degree. A piece of linen dipped in brandy is placed over the epigastrium or abdomen, and ignited; the brandy burns away in a minute or so, producing a considerable feeling of pain, which renders it necessary to secure the hands of the patient. Slight vescation will probably follow, and, if successful, in a short time heart and pulse begin to return, and the feelings of the patient are greatly improved; vomiting will also generally be put a stop to. It is probable that the application may soon require repetition, the situation being somewhat varied. In one case, now convalescent, in which death was apparently close at hand, the most complete effect was produced by a third application along the spine in the lumbar region.

Time will not permit me to give details of cases; but having now tried the *brandy blister* in seven or eight cases of total collapse, I repeat that in three it has been entirely successful, and in others has had the effect of temporarily rousing the patients; and if, as experience has since

taught me, in some of these it had been repeated with more energy, greater success might possibly have resulted. The patients now convalescent, say that is a *severe* remedy; but are quite conscious of its beneficial effects, and attribute to its use, without any hesitation, their restoration from impending death.—*Lancet, Oct.* 1, 1853, *p.* 323.

167.—*Treatment by Cold Water Affusion or Douche.*

[Mr. E. M. Macpherson, late surgeon in the army, during nine years' service in India, had several opportunities of seeing the valuable effect of this treatment. He says,]—At Cawnpore, in June, 1845, cholera broke out in the 53rd regiment, to which I then belonged, with the same virulence as attended it in various localities throughout India during that and the succeeding year. Two men, the last survivors of several who had been attacked within two days, were sinking under that fatal collapse which alone, without any other symptoms, marked all the cases that had occurred in the regiment.

Every remedy that could be devised to produce reaction had been tried in vain; they might as well have been put into the patients' breeches pockets, or applied to the bed-post. The exhibition of the nitrous oxide gas was not only fruitless, but far from encouraging. The breathing under its use became more oppressed and hurried; there was no pulse, nor was it rendered perceptible by the gas; and, as its continued exhibition distressed the patient, it was thrown aside as worse than useless. In despair at the utter want of the most trivial effect from the remedies employed, I made trial of the cold water affusion. I desired the water-carrier to pour water from his leathern bag over one of the patients; and, as the effect was good, then over the other patient, placed naked on a bedstead in the verandah. Attendants were at the same time employed in rubbing the limbs and trunk with their palms, and afterwards with dry towels. A refreshing sensation and comparative re-animation having followed each repetition of this operation, it was had recourse to at intervals, though only with the success of having prolonged life, which was ebbing fast for some hours.

This success, poor though it was, seemed to warrant the conclusion that, had the remedy been applied while somewhat more of life remained, recovery might have been the result. To test this conclusion by experiment, an opportunity was not long wanting.

On the same evening, as if by some fatal blast sweeping over the barracks, several men were suddenly struck down in a state of collapse. Some retained consciousness (*cholera asphyxia*); a few lost it, and were in a state of complete coma (*apoplexia*), with stertorous breathing; in three cases, attended with convulsions; others, especially towards morning, and during the two following days, were affected by vomiting, cramps, purging with rice-water dejection, and the usual concomitants of cholera in Europe.

How many came under treatment at this time I cannot now venture to affirm; but I believe I am correct in stating that, of all admitted, but two died—one of apoplexy; the other, who was allowed a warm bath, of cholera. The rest, all of whom recovered from the cholera, were treated by the cold water affusion.

Since the period above alluded to, I have not had an opportunity of treating cases of epidemic cholera. Several cases, however, of endemic cholera among Europeans, while it was, as often happens, epidemic among the natives, have been treated by me in every instance with success.

One of the most remarkable of these endemic cases occurred at Meerut, in August, 1848. A corporal of the 9th Lancers, an atrabilious subject, was brought to hospital at four p.m., almost pulseless, having been purged during the morning, and having passed several rice-water dejections on admission into hospital. There were slight cramps, and occasional efforts to vomit. He was immediately placed in a hip-bath, and water was poured over him, while hospital attendants rubbed the limbs and trunk. This was continued until he became chilly, and shivered. He was then removed from the bath, dry rubbed, and placed in bed, much revived by the operation, as was shown by less oppression in breathing, and a more distinct pulse. After remaining in bed for about half an hour, he began to relapse; the pulse sank; vomiting, purging of rice-water, and cramps, returned. He was replaced in the bath with the same effect as before. Being again placed in bed, he again relapsed. The water was again had recourse to, and repeated at intervals as above, according to symptoms, until ten p.m., six hours after its first application. The respiration then became free, the pulse soft and distinct; the natural warmth was restored, and remained; and the patient slept until morning, when he awoke with a furred tongue, feeling weak and drowsy, but without that consecutive fever so often more fatal than the disease itself, and which has always seemed to me to follow most in those cases in which brandy, opium, ammonia, or other stimulants, have been freely administered.

Meagre and unsatisfactory as the above statements must appear, taken as evidence of the efficacy of the treatment advocated, yet, if the action of the remedy shall be thought to afford a satisfactory explanation of its curative effect, one case successfully treated in the manner prescribed will carry more weight than accurate details of numerous cases, treated by the unknown action of some occult remedy.

The first effect of cold water, poured over the head and chest in a small stream from a water ewer, held at a greater or less height by a person standing on a chair or raising his arm over the patient placed in a bath, while frictions are applied to the trunk and limbs, is to produce, as in cases of ordinary asphyxia, a convulsive gasp or forced inspiration, succeeded by two or three strokes of quickened respiration. With each gasp, as by a convulsive throe, the parietes of the thorax, before immoveable, will be observed to expand, and the diaphragm will descend. Simultaneously with each effort of inspiration, the impeded circulation will be found to flow, the pulse to partake of the impulse, and the sluggish pupil to resume its wonted sensibility. These are the first and immediate effects of the water douche. When continued, they constitute reaction; and if this is maintained, the vital energy, even at its last ebb, the natural heat of the surface, and the colour of the skin will be restored. This is effected by the imbibition into the blood, through respiration, of atmospheric air taken in at each forced inspiration; the

entire surface being at the same time stimulated by frictions to the limbs. It being evident, according to this view, that the stimulating effect of the cold water douche is to be attributed to its power of exciting the respiratory function to take oxygen into the system, it may be inquired how the experiment with the nitrous oxide gas above alluded to failed so signally. One essential condition to its action was wanting; viz., that expansion of the thorax for the reception of air into the lungs, upon which the effect of the water douche so much depends. Since I have become aware of this as an essential condition in the effect produced by the water douche, I have not had an opportunity of repeating it in conjunction with the gas; but may it not be presumed that, taken together, if they do not prove an antidote to the disease, they are at least worthy of a trial. That the want of oxygen in the blood is the cause of cholera, has often been advanced, if not generally admitted; but the effect of this want upon the brain in producing vital depression seems to have been overlooked; whilst its effect, or that of some poisonous miasm in the system, upon almost every other organ of the body, has been fully insisted upon as indicative of some particular line of treatment to be pursued.

The mode of applying the cold water douche merely consists in placing the patient in any convenient position, so that, while water is being poured over him, frictions may be applied to the limbs. After the gasping has ceased, this process is to be continued until the depressing effect of cold, shivering, and chattering, sets in, when the pulse will begin to fall. The patient is then to be placed in bed, having been well rubbed. In a short time, when warmth begins to return, relapse will take place. The water is to be repeated in the same manner as above, and persevered in so often as collapse returns. After each repetition, its effect will be found to be more palpable and more prolonged; until at length, through the agency of the imbibed oxygen, the system is restored to its wonted power.

Many have mentioned in a general way the good effect of cold water in cholera; but none, I think, have understood the reason of this good effect, and therefore it has not been carried to its full extent.

It may be well to add, for the satisfaction of those who cling to the idea that cholera is a disease of vomiting, purging, and cramps, that under the water treatment, as described, these symptoms will soon cease to be objects of attention. They will in general subside on the first application, and seldom reappear after the third or fourth.

As to internal remedies, water to drink freely will be found the most agreeable to the patient's taste, less productive of nausea and depression, and not so prone to give rise to the often fatal consecutive fever.

As to the premonitory diarrhœa, on which much stress is laid, I would remark that in the worst cases of cholera it neither precedes nor accompanies the disease; that often, where it subsides, cholera sets in; that where it continues, cholera does not necessarily follow; that it is not part and parcel of the disease; that to view it as such, and to treat it accordingly, can only be in accordance with that style of medical reasoning which has ever puzzled the profoundest lawyers.—*Association Med. Journal, Aug.* 26, 1853, *p.* 754.

ADDENDA.

168.—ON THE MODE OF DEATH FROM THE INHALATION OF CHLOROFORM.

By E. R. Bickersteth, Esq., Liverpool.

[There can be no question that unless proper precautions are used during its administration, chloroform is a powerful and poisonous drug. Mr. Bickersteth has performed many experiments illustrating its effects, and he says,]

From these experiments the following conclusions may be derived :—

1st, That, in death from the inhalation of chloroform, the respiratory movements cease before the cardiac.

2nd, That the heart continues its action, uninfluenced by the chloroform, for a period longer or shorter after the cessation of respiration, and that its then failing may be considered as a natural consequence of the respiration having ceased, and as independent of the influence of chloroform.

3rd, That if, after the respiration has ceased, and while the heart is still in action, chloroform continues to be absorbed into the system, its movements may become impaired or cease—the chloroform in such case acting directly upon the heart.

4th, That if artificial respiration be resorted to before the cardiac contractions are seriously affected, and be properly maintained for a sufficient period, the respiratory function may be re-established.

It remains now to show that these principles are applicable to the human subject; and to do this, I shall narrate some cases that have occurred under my own observation, in which artificial respiration was the means of restoring the natural respiratory efforts when life appeared to have all but gone.

Case 1. A boy was cut for stone by my friend Mr. Hakes, on the 29th of March 1849. Chloroform was administered on a piece of sponge, and the full anæsthetic effect produced, before proceeding to tie him up in the ordinary position: the inhalation was continued, without any regard to his condition, until the operation had been completed—altogether about five minutes from the time he become insensible. It was noticed that during the operation scarce a drop of blood escaped. When it was over, the child was found to all appearance dead—the muscles were flaccid; the surface of the body pale; the respiration had ceased; the pulse could not be felt; the heart sounds were not audible (but the room was by no means quiet); the eyes were half open; the jaw dropped; the pupils dilated; and the corneæ without their natural brilliancy. Several means were tried to resuscitate him, but without effect. At length artificial

respiration was commenced—the air escaped with a cooing sound, as if from a dead body. After continuing it for a while, the breathing commenced, at first very slowly and feebly. Soon it improved. In two hours the child had quite recovered.

Case 2. In December 1851, a child a few months old was put under the influence of chloroform, for the purpose of having a nævus removed from the right cheek. As soon as insensibility was produced, the operation commenced—the handkerchief containing the chloroform remaining over the face, as some difficulty had been experienced in keeping up the anæsthetic effect. Suddenly the breathing ceased; the muscles became flaccid; the countenance pale and collapsed; and the lips of a purple colour. Artificial respiration was employed, and in less than a minute the breathing returned, and the child was restored.

Case 3. On the 6th of March 1852, I had occasion to remove the finger of a robust, healthy looking young man in the Royal Infirmary. He was already under the influence of chloroform when I entered the room, and as there had been some difficulty in producing complete anæsthesia, and the last of the chloroform in the bottle was already on the handkerchief, it was thought advisable by my friend in charge of its administration to keep up the inhalation, in order to produce a coma sufficiently profound to last until the completion of the operation. It was therefore left over his face, and I commenced and removed the finger, slowly disarticulating it from the metacarpal bone. I distinctly recollect hearing the man breathing quickly and shortly, and I also remember, that when just about to look for the vessels, my attention was attracted to his condition by not any longer hearing the respiration. The handkerchief was still on his face. I took it off, and found, to my consternation that the breathing had ceased; the face was livid; the eyes suffused, the pupils dilated; the mouth half open. He was to all appearance dead, still the pulse could be distinguished as a small, hardly perceptible thread, beating slowly. Immediately artificial respiration was commenced. For a minute or two his condition did not alter in any respect—then the lividity of the countenance increased, the pulse was no longer perceptible, and the sounds of the heart could not be satisfactorily heard. The words of the gentleman who put his ear to the chest, and who was well practised in auscultation, were, "I cannot be certain." During the whole of this time, artificial respiration had been diligently employed, but still the air appeared to enter the chest very imperfectly. I despaired. I felt certain the man was dead, and that no human aid could restore him; and if it had not been that those standing near me had urged me to persevere, I believe I should then have deserted the case as hopeless. Just at this time it occurred to me to put my finger in the mouth and draw forward the tongue, in order to secure there being no impediment to the air entering the lungs. Retaining it in this position, we again began the artificial respiration, and found that then the chest was fully expanded with each inflation. After keeping it up for a minute or two, the gentleman who had all along kept his hand on the pulse, exclaimed, to our delight, that he could again feel it—"It was just like a slight flutter that reached the uppermost of his four

fingers," all of them being placed over the course of the artery. It gradually become more distinct and firmer, and at the same time, the lividity of the face decidedly lessened. In another minute the man made a slight inspiratory effort. I ceased directly the artificial respiration, and assisted merely the expiration by pressure upon the ribs. Another and another inspiration followed, and in a short time he breathed freely without assistance. The countenance become natural, and he appeared as if in a sound sleep. In half an hour he spoke when roused; then he vomited, and complained of giddiness. In an hour afterwards he had recovered sufficiently to walk home.

Moments of intense anxiety appear much longer than they really are; but even allowing this, I am quite sure that, at the very least, five minutes elapsed from the time when the man ceased breathing before the first inspiratory effort took place, and that for not less than one minute, the pulse was imperceptible, and the heart's action almost, if not altogether, inaudible.

Case 4. A few weeks after the occurrence just described, I was assisting Mr. Syme in removing the breast of a lady. A gentleman, my superior in the hospital, was conducting the inhalation of chloroform. Anæsthesia was complete, and the breathing good, when the operation commenced. The chloroform was allowed to remain over the face during the whole time of its performance. Before it was over, I noticed the respiration become very quick and incomplete, and suggested, in consequence, the propriety of removing the handkerchief. My remark was neglected for eight or ten seconds, and then, just as it was taken away, the breathing ceased suddenly. The face became deadly pale; the eyes vacant; the lips livid. Instant dissolution appeared inevitable (the pulse was not felt). Artificial respiration was immediately commenced, but the air not entering the lungs freely, the tongue was pulled forwards and retained so with the artery forceps. The chest then expanded freely with each inflation, the air escaping with a cooing sound. In rather less than a minute the respiratory movements recommenced, but at first so slowly and imperfectly that it was necessary to assist expiration. When recovery was a little more established, the operation was completed. Before the putting in of the sutures, sensation had partially returned, and in a short time the lady had perfectly recovered.

I would here direct attention to the expediency of *drawing forward the tongue*, in all cases when it is found necessary to resort to artificial respiration. When the patient is lying on the back, so soon as the breathing ceases and the jaw drops, the tongue is particularly liable to fall backwards and close the orifice of the glottis. Artificial respiration, under such circumstances is worse than useless. It is better at once to pull the tongue well out of the mouth, and passing a hook through the tip, confide it to the care of an assistant. I am convinced that in some of the cases in which artificial respiration has failed, it has been from the neglect or too tardy adoption of this very simple means. Time of the utmost value has been lost in the absurd attempt to restore animation, by applying stimulants to the nostrils, or pouring cordials into the mouth, without even a thought that the first can have little or no effect

after the respiration has ceased, or that the second would as likely pass into the trachea and bronchi, as into the stomach.

There can be no doubt, that in the foregoing cases, a grievous erro was committed by continuing the inhalation after anæsthesia waspro-r duced, and that it was in consequence of this the accidents, so nearly fatal, occurred. After anæsthesia has been induced, the object for which chloroform is given is already accomplished, and there can be no use whatever for its further administration. It is very easy and safe to maintain complete anæsthesia for hours together, by occasionally giving a few inhalations of the vapour when there are signs of approaching return of sensation; but to continue the inhalation without interruption after anæsthesia is fairly established, is most certainly very dangerous, and will, sooner or later, varying according to age and constitution, prove fatal. Anæsthesia or paralysis of the nerves of sensation, is but one of a series of changes produced upon the system by chloroform. Paralysis of the respiratory system is the next and follows quickly afterwards, and if yet more be taken up, the nerves also of the organic system cease to perform their functions, and the heart in consequence is paralysed. It is thus only in death that the influence of chloroform ceases. Let it be especially remarked, how precisely analogous the symptoms in the foregoing cases were to those observed in animals under similar circumstances. The respiration ceased for a considerable period before the pulse, and artificial respiration being employed, the pulse returned before the respiration was re-established.

The pulse should not be taken as any guide during the administration of chloroform. It should be wholly disregarded, except under certain circumstances, when syncope is to be feared from loss of blood, during the performance of capital operations. The pulse is only affected secondarily in consequence of the failure of the respiration. It therefore follows that our attention should be mainly directed to the latter, while the former may be altogether neglected, or at any rate considered as only of secondary importance. By carefully watching the pulse, the attention must in a measure be taken away from the respiration, and exactly to such a degree, it is productive of evil; for, in order to guard against mishaps, and at the same time conduct the inhalation with confidence, the breathing must be observed with the greatest care and attention. But when it is thus asserted, that death always commences in the organs of respiration, and that the heart only ceases to act in consequence of the lungs having previously failed in the performance of their functions, I would wish to be understood. In the first place, I should be sorry to deny the existence of individuals with such peculiar nervous idiosyncrasy, that the converse of this (the ordinary rule) might obtain. With such an example however I have never met, nor have I ever encountered a single occurrence that would lead me to suppose the heart peculiarly or rather primarily susceptible. In the second place, it must be remembered that if, after respiration has ceased, chloroform in any considerable quantity be absorbed into the system, it will act directly upon the heart and speedily stop its contractions. And thus, if with the last inspiration a sufficient quantity of the pure vapour is inhaled, the movements of the heart will cease almost immediately, and so it

might appear that the respiration and cardiac contractions have stopped simultaneously, although in fact a brief interval has existed, an interval, in short, long enough to permit of the absorption of the chloroform taken into the lungs with the last inspiration.—*Monthly Journal of Med. Science, Sept.* 1853, *p.* 211.

169.—*Case of Suspended Animation under Chloroform; Artificial Respiration; Recovery.* By EDWARD WILLIAM LOWE, Esq., late House Surgeon to St. Bartholomew's Hospital.—[In this case the patient was a young man, aged 22. The operation about to be performed was partial excision of the left elbow-joint. He seemed in all respects a proper subject for the administration of chloroform. Mr. Lowe continues:]

Dr. Scott, who has so frequently administered the chloroform, did so on the present occasion. The man was rather restive, but nevertheless took it moderately well, and, having been rendered insensible, I had proceeded with the operation almost to its completion, when the patient became suddenly deadly pale and cold, his pulse intermitting alarmingly, and his breathing becoming convulsive. His face was quickly bathed with cold water, and fresh air admitted freely to him; he, however, grew still worse, his respirations became more feeble, and his pulse could no longer be felt at the wrist. He was instantly laid on the floor, and the feeble action of the chest gently aided by the hands; in spite of this, in about a minute or so, from his first seizure, he gave two or three short respirations, and, with a convulsive struggle, ceased to breathe, and his jaw dropped. As he did so, quick as thought, we bent over him, and Dr. Scott, closing the mouth, inflated the lungs by the nose, first covered with a cambric handkerchief, while I, with a hand on each side of the chest, gently emptied them; thus we continued for full four minutes without producing any sensible result; at last a gentleman who held the wrist exclaimed, "There is a beat!" and after the lapse of a few seconds, "There is another!" Then a third. Now it began to beat violently, and the chest to heave deeply, but with a short period between each action. Presently the pulse beat more slowly, quietly, and regularly, but more feebly, and the chest acted spontaneously. After the lapse of a few more minutes, the man opened his eyes and smiled; being asked, he said he could swallow,—so, ceasing all aids to his respiration, he was given a little brandy; but not a drop was given until he declared he could swallow. He was now sensible, his respiration restored, and his pulse acting naturally, though feebly; yet he still remained of a deathly coldness, and it required no little trouble to make him warm; his own expression well explained his condition, "He was as cold as if he were dead;" and, indeed, he was so. Brandy inside, blankets and hot water bottles outside, did, after a time, manage to restore him to something like a natural state of heat, and shortly afterwards he was able to sit up, and, in a little while, to be sent in a carriage home.

He has, since this, continued to go on quite well, never having felt any uncomfortableness, excepting a slight occasional tightness at the

chest (which is often experienced after chloroform), and even now he is quite ignorant of his narrow escape.

I am fully persuaded that this case is a convincing testimony in favour of a steady perseverance in artificial respiration, as a remedy for the fatal effects of chloroform. To M. Ricord we owe its first recommendation and adoption. There can, I believe, be no doubt of its superiority over any other plan; but to make it effective it must be done well, and steadily persevered in. The present case tells well in favour of perseverance. Four minutes is a long time, under such circumstances, to continue steadily one plan without obtaining any benefit, and yet it triumphed in the end, and, to complete our victory, we had to continue the artificial respiration for full eight minutes without cessation. Our reward was success; and I cannot but believe the same reward awaits every one, who, under similar circumstances, will steadily pursue the same treatment.—*Med. Times and Gazette, Aug.* 13, 1853, *p.* 174.

170.—ON THE ARSENICAL TREATMENT OF CASES OF SNAKE-BITE.

By Benjamin Travers, Jun., Esq., F.R.S.

This subject has always been one of especial interest to me, in consequence of the great probability that we possess in arsenic a remedy which, if administered boldly and in time, will rescue the sufferer from an imminent and painful death. I believe no one has ever questioned the accuracy of the facts recorded of the comparatively certain operation of the tanjore pill, and Mr. Ireland's cases, of which he enumerates five treated with unvarying success, are powerfully corroborative of Dr. Russell's statements. Mr. Ireland, on his arrival in the island of St. Lucie, having previously heard the facts concerning the efficacy of arsenic stated in Mr. Chevalier's lectures, proceeded at once to test the truth of the proposition, by administering one grain doses of the mineral (in the form of arsenite of potash, as it exists in Fowler's solution), every half hour until the patient began to revive. He treated five cases with perfect success in this manner. The men severally took six, seven, and eight doses of the following form, before the irritating operation of the arsenic began to show itself by vomiting and purging. What is very remarkable, is the immediate and complete recovery of these patients, without the arsenic having produced any trace of its poisonous agency, or any subsequent ill consequences. Mr. Ireland prescribes as follows—

℞. Liquor. arsenicalis ʒij.; tincturæ opii gtt. x.; aquæ menthæ pip. ℥iss.

to which was added half an ounce of lime-juice: the medicine being taken in a state of slight effervescence. The embrocations and clysters mentioned by him, cannot be regarded as having had much to do with the cure, but were no doubt useful in some degree. On one occasion only did Mr. Ireland amputate the finger on account of the extent of the laceration. In the remaining instances he contented himself with paring the edges of the wound and dressing it superficially.

It is well admitted by most physicians that arsenic will cure chorea, if given in proper doses and for a sufficient time. Mr. Martin, of Reigate, and Mr. Salter, of Poole, have adduced abundant evidence of the great powers of arsenic in the cure of this disorder. Now, having a due regard to the condition of the nervous system in these two instances of its disturbance from such different causes, I think we must conclude that arsenic operates specifically and powerfully in that direction. Dr. Taylor tells us that it is not a corrosive poison, and although four or five grains have been found sufficient to destroy life, patients have recovered after taking sixty. Such a case is upon record; it was published by Dr. Roget. A grain of arsenic every half hour sounds somewhat heroical, but I should like to see this remedy tried in hydrophobia as Mr. Ireland used it to quell the effects of the snake poison. I think it may be shown that arsenic powerfully and specifically stimulates the semilunar ganglion and its tributaries presiding over the organic life of our bodies. Its "evacuant" operation is an incident of prime importance in cases of poison. It should always be given on these occasions until the patient vomits and purges abundantly.—*Association Med. Journal, Sept.* 16, 1853, *p.* 812.

171.—ON GALLIC ACID IN THE TREATMENT OF PURPURA HÆMORRHAGICA.

By T. P. J. Grantham, Esq., Burgh-le-Marsh, Lincolnshire.

[Gallic acid has long been known to be a valuable remedy in passive hemorrhages. The following cases show its value in purpura.]

Case 1. Mr. E., a farmer and miller, aged 60 years, came under treatment on the 18th November, 1852. Two days previously, he had noticed a soreness of the tongue, and perceived that the saliva was bloody. The symptoms of purpura were well marked. The gums were spongy, and they bled freely. The tongue and the buccal mucous membrane were dotted with purple fungoid excrescences, some of which were as large as split peas, and from them blood oozed. The breath was offensive, and the appetite was impaired. The urine contained a considerable quantity of blood. Petechiæ were scattered over the thoracic and dorsal regions; and there was a large ecchymosis on one arm, and another on one of the thighs. The gallic acid was administered in five-grain doses every three hours, and two compound rhubarb pills were given at bedtime. On the 20th, the purple excrescences had shrunken and ceased to bleed; the petechiæ and ecchymosis had faded; and the urine was free from blood. On the 30th, the improvement had been sustained. He was quite well again. He said that the first dose of medicine seemed to do him good. Only four scruples were taken.

Case 2. This was a more serious case, several days having elapsed from the first setting in of hemorrhage from the nose before the patient came under my care. Master C., aged 16 years, a draper's apprentice, was seen by me on the 21st June, 1853. He was greatly exhausted and blanched from epistaxis, hæmoptysis, melæna, hematuria,

petechiæ, and ecchymosis. He was immediately ordered to take gallic acid in doses of three grains every three hours, and subsequently in five-grain doses every two hours. The pil. rhei. comp. was given as an aperient. The treatment was followed by most marked benefit, and before a week had elapsed, all hemorrhage had ceased. On the 5th July, a slight recurrence of epistaxis happened, owing to his having too soon resumed active exercise. But the bleeding was quickly checked by a few doses of the acid, and complete convalescence speedily followed.

Case 3. H. B., aged twelve years, son of an agricultural labourer, after three weeks illness from typhus then prevalent in the village where he resided, was seized on the 16th August 1853, with hemorrhage from the nose, gums, and bowels. The tongue was dotted with purple spots, and the back sprinkled with numerous small petechiæ. The treatment adopted was the same as in the former cases. On the 17th, hematuria was superadded to the other symptoms, which were very severe. On the 18th, the hemorrhages began to abate. On the 20th, the spots on the tongue and the petechiæ had faded; the hemorrhages had nearly stayed. On the 21st, a severe return of epistaxis occurred, from picking his nose. This was followed by alarming prostration of strength. He was ordered to take the acid every hour, and to have his nose plugged. On the 22nd, all bleeding had ceased. On the 30th, I found that there had been steady and daily improvement since last report. On the 31st, he was convalescent.

This was a severe case, as the patient's strength had been so much reduced by a previous exhausting disease, and accordingly it was necessary to push the acid to a considerable extent.—*Association Med. Journal, Sept.* 9, 1853, *p.* 793.

172.—*Turpentine in the Treatment of Purpura.* By Wm. Smith, Esq., Chesterfield.—[Mr. Smith's attention was led to the use of this remedy from the mention of it in Dr. Copland's Dictionary. In a case he relates, the patient being a child six years old, purpura first appeared on the lower extremities, in the autumn of 1852, though no medical advice was sought until the spring of the present year. He says:]

In the case now narrated, the child had for some time lived chiefly on animal food, in fact, on the usual farm-house diet—bacon. On my first examination of her, March 15th, 1853, several very large ecchymoses were present on the legs, and one of the size of an egg on the forehead, the result of a slight blow. The smallest pressure produced them. There had been considerable bleeding from the nose on several occasions, and once from the bowels. There was oozing of blood from the gums. The urine was high coloured, and the alvine evacuations pale and generally constipated. I treated this case first with purgatives, and then with diluted sulphuric acid. She was also ordered to suck oranges, drink lemonade, or weak beer, and to eat rhubarb tarts.

The case did not progress with this treatment; the epistaxis was indeed, somewhat diminished, but the other symptoms continued much the same.

Under these circumstances I gave the child citrate of iron combined with citric acid. This succeeded better, and after three months perseverance, the cutaneous discolorations ceased. The progress of cure was, however, extremely slow, and a relapse has since occurred, but the patient has again recovered under the use of the citrate of iron.

The second case occurred in a little girl, aged 4, generally strong and active, and residing in a spacious house situated near a tannery. This case was very acute. There was first remarked in her a disinclination to food, especially vegetable; and extreme irritability of temper. The bowels were extremely constipated. These symptoms ushered in the attack. The lower extremities became weary and stiff towards evening, and three large elevated spots, varying from the size of a fourpenny piece to that of half-a-crown, appeared upon them. These spots became rapidly purple and soft, and gave the impression to the touch of fluid blood under the skin. In the morning they became yellow, and gradually were absorbed, but others, larger and higher up the legs succeeded. Two formed of a very large size in the hams, and the skin became so thin that I thought it would give way. The child, in three days, became pallid and exsanguine, and her pulse very sharp and hemorrhagic. After using a mercurial purge, I at once resorted to the following mixture:

℞. Olei terebinth. ℥ss.; olei ricini ℥j.; mucilaginis, sacchari, āā, q. s.; olei caryophyl. gtt. iv.; aquæ dist. ad ℥viij. Misce ut fiat mistura, cujus sumat cochleria ij. vel iij. bis vel ter in die.

The effect of this mixture was most satisfactory. The purpuric spots rapidly disappeared, the bowels acted copiously and naturally, the appetite of the child became good, and the temper cheerful.

I certainly believe that in all passive hemorrhages, turpentine will be found most valuable in its effects; and in this class of diseases we must generally place purpura.—*Association Med. Journal, Sept.* 9, 1853, *p.* 792.

173.—*Lupulin (the Alkaloid of Hops) as an Anaphrodisiac.*—M. Debout, of Paris, editor of the 'Bulletin de Thérapeutique,' has found lupulin extremely useful in chordee, priapism, traumatic orgasm, and spermatorrhœa. The lupulin should be used in powder, and triturated with lump sugar. The dose is from fifteen to thirty grains. M. Ricord and M. Puche have carried the dose from one to three drachms without any unpleasant effect.—*Lancet, July* 2, 1853, *p.* 8.

174.—*Administration of Ether in Capsules.*—In the 'Journal de Médecine et de Chirurgie Pratiques' for April 1853, M. Clertan, of Dijon, states that he has for some time been accustomed to give ether in capsules in nervous affections. After several years of observation, by himself and others, he concludes that ether, when introduced in a known dose, pure, and without loss, into the stomach, has an effect which was totally unknown until the preparation of the ether pearls (*perles d'éther*). According to the old plan, the ether became partly volatilised before

passing half way down the œsophagus; and what arrived in the stomach was dissolved in water, and in a state favourable to rapid and sudden volatilisation. M. Clertan has several times seen neuralgia, hemicrania, and gastralgia, arrested instantaneously by from one to three of these capsules; while ether draughts, and ether in sprup, had been largely given without any effect.

The editor of the 'Union Médicale' for April 12th, in noticing M. Clertan's preparation, states that the ether capsules are already employed extensively by M. Trousseau, M. Pidoux, and other practitioners in Paris. The advantages of the capsules are :—

1. The ether can be administered in a known dose—each capsule containing four or five drops.

2. The capsules are inodorous; so that ether can, without their knowledge, be given to persons to whom its smell is repulsive.

3. The capsules permit neither evaporation nor decomposition of the ether; they may be kept a year at least, or indefinitely, according to M. Clertan.

4. The ether arrives in the stomach without irritating the membrane of the mouth or pharynx, or producing cough; and it produces its sedative action by its rapid absorption.—*Association Med. Journal, Sept.* 2, 1853, *p.* 779.

175.—*Stringfellow's Electro-Galvanic Pocket Battery, for Medical Purposes.*—This invention was cursorily mentioned in a report of the proceedings of a late meeting of the Medical and Chirurgical Society. The principal features in which it differs from former contrivances consists in its being composed of a number of compound bars or plates, permanently arranged in series, one, two, or three of these forming a battery. One sufficiently large for personal use is composed of two of these series, or twenty-two bars, which will occasion a sensible shock; or, under continued application is powerful enough to cauterize the skin. Its power can be so regulated as to supply an electric current of any less intensity that may be required; and the efficiency of these batteries is shown by the fact, that one consisting of six bars, excited by water alone, will decompose that fluid, and produce a mild continuous current through any part of the body. These batteries are also constructed of much higher power; the value of which, from their ready application in urgent cases, as well as for various scientific purposes, cannot fail to be appreciated by all persons interested in, or acquainted with, the numerous medical and other important uses to which electro-galvanism may be successfully applied.

The portability and neatness of this battery is one of its recommendations. We feel assured that where electricity has been found beneficial, this miniature galvanic machine will prove of value. It is easily employed, and well adapted for the relief of nervous invalids.—*Lancet, July* 2, 1853, *p.* 9.

176.—*Removal of a Gold Ring from a Young Lady's Finger.*—[In a letter to the editor of the Lancet, Dr. Castle, of New York, thus describes a plan of removing a ring from the finger, after many others had been tried in vain. He says,]

I at once proceeded to the house of the patient, and found the young lady in a most deplorable state of mental agony, the doctor embarrassed, and the family in a high state of excitement. I procured some prepared chalk, filled in the ring, and covered all round the finger with the preparation, and succeeded in drying the abraded flesh; then with a narrow piece of soft linen I succeeded in polishing the ring, by drawing it frequently and gently round the ring between the swollen ridges of flesh. I then applied *quicksilver* to the whole surface of the gold. In the course of *three minutes*, by gentle pressure with the nippers, *the ring broke into four pieces*, to the relief of all parties.

In a similar manner (without the chalk) I extracted a small brass ring, which a child had (child-like) inserted into the cavity of its ear. The operation was more tedious and more painful, but equally successful.

The modus operandi of the mercury.—It at once permeates and amalgamates with the metals, with the exception of iron, steel, platina, and one or two others. It immediately crystallises, and becomes as hard and as brittle as glass, and with the same ease can be broken.—*Lancet, Aug.* 6, 1853, *p.* 134.

[Dr. Newnham, in a note to the 'Lancet' gives the following method. "Wind closely and tightly round the finger as far as the ring, a piece of well-soaped twine, then, with the end of a needle or probe, force the end of the twine beneath the ring, and gradually unwind. The ring will come off with the twine."]—*Lancet, Aug.* 20, 1853, *p.* 178.

177.—*On the Different Kinds of Whey.*—[We have heard so much lately of the cures performed by several kinds of whey, that the various receipts below may not be uninteresting.]

The following is a translation of the directions given in the 'Pharmacopœia Borussica' of 1829, for the preparation of five different kinds of whey:—

1. *Serum lactis dulce, Sweet whey.*—Take an ounce of the dried stomach of a calf, infuse with six fluid ounces of cold water for ten or twelve hours, add an ounce of this liquor to nine pounds of fresh cow's milk, warm gently, and after coagulation is effected, decant and strain the liquid.

2. *Serum lactis dulcificatum, Sweetened whey.*—Take three pounds of cow's milk, boil, and at the commencement of ebullition add one drachm of bitartrate of potash; when the coagulation is effected, and the whole has become cool, strain, and boil with a sufficient quantity of white of egg beaten up into a froth, until the albumen is coagulated; strain, and add as much prepared chalk (or shells) as is required to neutralize the acid, and filter.

3. *Serum lactis acidum, Sourwhey.*—The former without addition of the chalk.

4. *Serum lactis aluminatum, Alum whey.* 5. *Serum lactis tamarindinatum, Tamarind whey.*—In these respectively a drachm of crude powdered alum, or one ounce of the pulp of tamarinds, are employed instead of the bitartrate of potash.

Other pharmacopœias direct the preparation of a variety of whey with vinegar, or with Rhenish wine; in the latter case the proportions are eight ounces of wine to three pounds of milk.—*Brit. and For Med. Chir. Review, July,* 1853, *p.* 149.

178.—*On Ferruginous Collodion.* By M. Aran.—Having observed the utility of the salts of iron in erysipelas, M. Aran, to facilitate their application, combined them with collodion, forming a preparation which united the compressive and astringent effects. It consists of equal parts of collodion and Bestuchef's tincture (etherial tincture of perchloride of iron). Spread on the skin, it forms a somewhat thinner pellicle than ordinary collodion, but it is much more supple and resisting, so that the limb can be moved in any direction without the cracking which takes place when collodion alone is used. Its adhesion is also more prolonged.—*Bull. de Thérp.,* xliv.370.—*Brit. and For. Medico-Chirurgical Review, July,* 1853, *p.* 277.

179.—ON THE ANÆSTHETIC PROPERTIES OF THE LYCOPERDON PROTEUS, OR COMMON PUFF-BALL.

By Benjamin W. Richardson, Esq.

[Mr. Richardson's attention was first directed to this subject from a friend mentioning to him that bees were sometimes stupified with the smoke of this fungus before the contents of the hive were removed. They gradually recover from the insensibility, and thus the cruel necessity was obviated of destroying them by the fumes of sulphur. He then commenced a series of experiments, illustrating its effect upon animals. He says:]

My first experiment was made on the 28th of last March. A kitten was placed in a bell-shaped glass vessel, open at bottom and top. Smoke from a piece of the fungus ignited was allowed to rise pretty freely into the bell; but several interruptions occurred, so that thirty-five minutes elapsed before any positive effect took place. By that time, however, the creature was fairly narcotized. A cut in the ear produced no sign of pain. The breathing was reduced to eight respirations per minute, and the temperature of the body was lowered. From time to time, after removal from the bell, I counted the breathing and the heart-beat, and found them gradually increasing in number, and the body becoming warmer. The sleep, however, was profound; and, after a period of two hours, no sign of sensibility to pain could be elicited. I laid the animal

down by the side of her mother, and in the morning found her skipping about as well as ever.

The second experiment was performed on a dog. It was placed in a box, in which it had sufficient room to turn round, and in which the atmospheric air could enter freely from the top. The smoke of the fungus was admitted through the bottom of the box, and the animal was fairly narcotized in a quarter of an hour. On removing it on to a table in the narcotized state, a deep puncture was made in the nose: blood of a bright red colour flowed freely, but no sign of pain was given. The symptoms that preceded the narcotism were those of intoxication: the animal turned round several times; power in the legs ceased; and it fell down at last on its side, insensible; the bowels acting involuntarily. For five minutes after the anæsthesia had come on, the respirations numbered forty-eight per minute; but the heart-sounds were steady, and comparatively slow; the first sound corresponding to each inspiration. The body was warm. Five minutes later, there was a convulsive fit; but the body was still insensible, and the pulse forty per minute. The pupil was dilated and fixed, but the head was drawn back when a light was brought near to the eye. Three minutes later, the animal was becoming conscious, and wagged its tail when spoken to, but showed no pain when pricked with a knife. At a quarter-past nine it commenced to wince when pinched, and crawled about in a reeling manner. From this time, the recovery was rapid; and in ten minutes the creature seemed as well as though nothing had been done to it.

In a third experiment, at which Dr. Crisp was present, a dog was again the subject. There were the same symptoms of intoxication, but complete narcotism set in in six minutes. In this case, the narcotizing agent had been given more freely and steadily that in the previous cases. Eighteen minutes after removal from the box, the animal remained insensible to pain, but was conscious when spoken to. Blood drawn from the nose was of a bright red colour. The other symptoms were very similar to those described in the last experiment. Two minutes later, rallying commenced; and in twenty minutes the creature had quite recovered. We remarked, that the sensibility returned in the fore legs previous to returning in the hinder ones.

Finding that the impure fumes of the burning fungus were rather painful to breathe, as they produced some degree of irritation in the throat, and caused the eyes to water, I made them pass through a solution of caustic potash, previous to exposing the animal to their influence. This was easily done. The smoke, being produced in a large closed vessel, was forced by water-pressure through a Wolff bottle containing a solution of caustic potash, and was received in an inverted glass bell. I thus obtained a perfectly clear gas, free from carbonic acid. A young cat was now placed under the bell; she became slightly convulsed in thirty seconds, and was profoundly narcotized in two minutes. The heart-beats were not much affected, and recovery took place in seven minutes after removal from the vessel.

This experiment was performed on the 13th of April; and on the following day I repeated the experiments, both with the impure and

clarified vapour, in the presence of Dr. Willis and Dr. Cormack, with complete success.

Mr. Sampayo, a gentleman residing in Barnes, had a favourite dog, which was very old, was constantly troubled with cough, and had a large and painful tumour over the abdomen. As the owner of the dog wished to have this tumour removed, Dr. Willis thought there would be a good opportunity for trying the anæsthetic power of the fungus during an operation. He therefore kindly undertook to cut out the growth, if I chose to produce narcotism. I did so with the impure smoke of the fungus. The animal was narcotized in six minutes; and the operation, which occupied ten minutes, was done without the merest sign of pain until the last suture was being put in, when wincing took place. Neither the heart nor the respirations seemed much affected in this instance. The recovery was so rapid, that, in six minutes, it would have been impossible to tell, without previous knowledge of the fact, that the animal had been subjected either to narcotism or operation.

I need not occupy time in giving the details of several more similar experiments; I will, therefore, refer only to a few others, which are of special interest.

On several occasions I have given the narcotizing vapour in limited quantities, and for a long time. This dilution of the narcotic has been effected either by mixing the clarified fumes of the fungus with a large quantity of atmospheric air, or by using a preparation of the fungus, which has been deteriorated by charring it, as I think, and which is sold in the shops under the name of "prepared fungus for fumigating bees." In this diluted shape, the narcotic produces a modified class of symptoms. Narcotism is induced very slowly, the animal reeling for a long time, and seeming to be paralysed, without being altogether free from pain. Convulsions, too, and vomiting, are apt to come on, and the animals recover gradually, but surely. I experimented on three animals, in the presence of Dr. Snow, in which these results followed. One of the animals vomited; and in all the cases, the anæsthesia, though sufficiently marked, was not so perfect as in some other instances. By continuing the exhibition of the narcotic, however, we succeeded in destroying a rabbit. The symptoms which the very diluted fumes of the fungus produce in animals, are somewhat like the effects of tobacco in persons who are not accustomed to smoke, with the addition of more decided narcotism and insensibility. It is worthy of remark, that an animal can be made to tolerate this narcotic by inhaling it frequently. I have a dog on which I have experimented from the first. Originally, the creature would come under the influence of the narcotic in six minutes; she will now inhale it, in liberal proportions, for an hour, at the end of which time she is intoxicated, and vomits if she has had a meal previously; but she is quite conscious, answers to her name, and tries to walk; the sensibility of the body being absent altogether, and the limbs occasionally convulsed. It requires a space of half an hour for her to recover from this condition. I have noticed that young animals, whose respirations are quick, although rapidly narcotized by a large dose of the substance, resist the action of a diluted dose very obstinately. I have kept young kittens for more than an hour in the vapour, and, under its

influence, rolling about in the most drunken manner, but not absolutely insensible; when, however, complete narcotism does set in, it continues for a long period.

It occurred to me to give the narcotic in connexion with oxygen gas: the fungus was therefore burned in oxygen, and the dense fumes produced were clarified by caustic potash, and were passed into the glass bell, together with some free oxygen. A young cat was placed under the bell: she became uneasy in thirty seconds, and was fairly narcotized in a minute and a half. On removing her from the glass, the respirations were forty-six per minute, and the insensibility of the body was perfect. She recovered in four minutes, and ran out of the room.

It was a matter of some importance to ascertain if the narcotic principle of the fumes of the fungus would be given up to any fluid substance through which they might be passed. Yesterday, therefore, the fumes arising from the burning fungus, mixed with a large quantity of atmospheric air, were first driven through caustic potash, and then, in this diluted state, were passed, through alcohol, into a glass bell. A kitten placed under the bell soon became uneasy, at the end of an hour was taken out insensible, and recovered slowly.

I have intentionally destroyed a great many animals with the narcotic, in order to observe how it would produce death. The respirations fail in a gradual and progressive manner, until they cease altogether, and the breathing sounds are dry and loud. The pupil is usually dilated and fixed for several minutes previous to absolute death. The temperature of the body sinks slowly. The heart continues to beat quickly for some time after respiration has ceased. The blood is always red, and generally not readily coagulable; but in a cat which had breathed oxygen gas with the narcotic, it coagulated with great rapidity. The lungs are of a pale or pink colour, never congested, nor is there congestion of any other internal organ. The heart is empty of blood in most cases; and its contractions may be excited for long intervals of time. The respiratory muscles and the bowels may also be excited to motion for a long period after the body is laid open. In four kittens which I opened before respiration ceased, I saw the rhythmical action of the heart, and regular respiratory acts, for twenty-five minutes after the opening. The peristaltic action of the bowels remained for not less than forty minutes. In no case have I found the brain and spinal cord congested, or in any degree visibly affected. Cadaveric rigidity soon becomes very marked.

To sum up the results of these experiments: there is, it is evident, a principle in the fumes of the puff-ball capable of causing anæsthesia in animals. The physiological effects brought out by this anæsthetic are also very marked. In a liberal dose, it narcotises rapidly and effectually, without unpleasant symptoms; and the narcotic effect soon passes off, leaving the animal in perfect health. In diluted doses, it produces intoxication and convulsions; is longer in causing anæsthesia; sometimes excites cough and vomiting, and leaves the animal for a long time stupid and unwell. When it is carried to the extreme, the respirations cease before the beat of the heart. Indeed, in observing animals under the influence of the narcotic, it is only necessary to watch the respiratory movements; if these remain, even though reduced to the lowest, the animal

will certainly recover on removing it from the cause of the narcotism. In this respect the narcotic principle of the fungus resembles the Woorali poison.

Experiments with the fungus may be performed in various ways. If the impure smoke is to be used, it is only necessary to let it pass freely into a box, through a hole in the bottom. A large tin funnel fixed beneath the box in an inverted position will readily convey the smoke. The box having been filled with the smoke, the animal is placed in it, and the lid is laid lightly on. Narcotism will generally take place in eight or ten minutes, often sooner.

To clarify the fumes arising from the fungus, two small tin funnels are made to fit mouth to mouth, and the nozzle of one funnel is connected with a Wolff bottle containing a solution of caustic potash. Another tube, connected with the Wolff bottle, will convey the clarified fumes away. If, now, a piece of the fungus be placed in a burning state between the funnels, the smoke can either be drawn by the mouth from the exit tube of the bottle through the ordinary double valve apparatus for chloroform, or it can be driven over into a bell jar, by fixing the nozzle of a pair of bellows to the free end of the funnels, and blowing gently. The glass bell into which the vapour is received should be placed on a nicely fitting board, and the animal must be passed into the bell quickly, after it is charged with the narcotic vapour.

Some one, perhaps, will ask, What is the nature of the narcotic principle contained in the fumes of the fungus? Is it a product or an educt of combustion? On this subject I have no direct information. That several of the fungi do possess a narcotic principle, has long been known; but no analysis has as yet thrown much light on the subject. In some countries fungi are used for making intoxicating potions. Our very distinguished countryman, Dr. Alfred Taylor, in the second edition of his valuable 'Manual of Medical Jurisprudence,' thus remarks on the fungi:

"Most of the narcotic irritant poisons, just considered, owe their deleterious effects to the presence of an alkaloidal principle similar to morphia, and susceptible of insulation by complex chemical processes. There is, however, considerable difficulty in extracting these alkaloids from the respective vegetables; and when extracted, the chemical differences among them, in respect to the action of tests, are so slight, as to be scarcely appreciable, even in the hands of a practised analyst."

The few conclusions, then, which it is in my power to offer with regard to this subject, are very insignificant; and are derived more from physiological observation than from chemical inquiries. However, they had better be stated.

1st. The narcotic principle is given off freely during the combustion of the fungus; and, as it exists in the fumes produced, is highly volatile.

2d. Combustion of the fungus in oxygen gas does not destroy the anæsthetic principle.

3d. The anæsthetic principle is not quickly absorbed or destroyed, either by water, alcohol, or strong alkaline solutions.—*Association Med. Journal, June* 3, 1853, *p.* 479.

180.—*Nickels' Elastic Plaster, &c.*—Mr. Nickels, of Camberwell Green, has forwarded to us some specimens of a plaster of which he is the patentee. Its novelty consists in the extensibility, in one direction, of the material on which the plaster is spread, so that it is capable of being more accurately fitted to the parts on which it is applied than are the plasters in general use. The material varies in thickness to almost any required amount; and any kind of plaster may be spread on it. We consider Mr. Nickels' plaster an useful addition to our surgical armamentarium.—*Association Med. Journal, Oct.* 7, 1853, *p.* 884.

181.—ON CRAMP AND SPASM.

By Dr. P. J. Murphy.

Cramp is a sudden, involuntary, complete, and painful contraction of a muscle. All the voluntary and some of the involuntary muscles are liable to these contractions. Spasm is the term usually employed when this painful affection seizes on an involuntary muscle; of the latter class the most common sufferers are the heart and uterus; the uterus can suffer spasm when enlarged only. It is questionable whether muscles of canals, or even those of the bladder can suffer to such extent from spasmodic action as demands medical treatment.

The involuntary contraction of muscles may vary in degree, from the painless form of subsultus tendinum or chorea, to the excruciating tortures of tetanus or epidemic cholera. The remote causes are various and dissimilar—irritation of the spinal chord; of the medulla oblongata; of the peripheral extremity of a nerve, mechanical or pathological; disease within the cranium, or a poison, as ergot of rye, circulating through the vessels. Involuntary contractions, attended with insensibility, are termed convulsions. The observations here refer solely to what may be called local cramp or spasm, originating in, and restricted to one muscle, as observed in the gastrocnemius; in the uterus, as after-pains; and to that alarming spasm of the heart, angina pectoris.

Cause.—The immediate cause of local cramp would appear to be *a languid circulation in the veins which traverse the substance of a muscle.* This theory will explain why cramps attack most frequently the voluntary muscles furthest from the organ of circulation—the feet and legs; why they are more common in cold weather; why the principal sufferers are females, especially those with weak pulse, pale countenance, and chilly surface; and therefore why they are so seldom absent in chlorosis. It will also explain why the seizure is most usual in the horizontal position, when muscular action, so favourable to the circulation, has ceased. Nearly one half of the young, growing females, with a tendency to chlorosis, suffer from this annoying complaint; and it is remarkable, that although we have many cases where the cramps are limited to the muscles below the knee, we meet with none where the remark will apply to those above the knee. No enquiry being made about this symptom, it is seldom mentioned to the physician, and yet it is almost pathognomonic of an enfeebled action of the heart, from which the anæmic headache

springs. When this affection is complained of, whether in the aged or the young, no matter of what sex, the necessity for chalybeates is indicated. Dr. Brady makes one proper exception—in cases of pregnant females; but the cause of their languid circulation is mechanical, and therefore not remediable by medicine. It may very naturally be asked, if a feeble and delicate constitution predisposes to cramp, why it is not an attendant on the last stages of diabetes, phthisis, and other exhausting diseases? Because those diseases produce hectic fever, and hectic is accompanied with a pulse so rapid as to be incompatible with a slow, venous circulation. Nor does it supervene in debility after profuse hemorrhage; the rapid pulse of reaction, and the half empty vessels affording a satisfactory explanation of its absence. The severest cramps we witness from arrest of circulation in the veins of muscles, are those which add so much to the horrors of epidemic cholera, for these cramps, although general, in an exact sense must be considered local, no muscle contracting until the blood in its own veins is arrested. It is an error to attribute the cramps of epidemic cholera to a poisonous quality of the disease, and the recollection that our own autumnal cholera is accompanied with similar cramps, should disabuse us of this mistake.

In neither form of cholera do cramps supervene, until the venous circulation through the muscles is almost impeded from the density of the blood, a natural consequence of the exudation of its serous portion. No person can doubt that in epidemic cholera the circulation is from this cause almost arrested; for on puncturing a vein, the blood trickles down slowly, thick and dark as tar. Fatal cases of Asiatic cholera, it is true, are recorded, where few or no evacuations took place, yet cramps, although not violent, were noticed. Such cases might favour the opinion that the cramps depended on the inhalation of a specific poison, did not the post-mortem examinations discover the exuded serum still in the intestinal tube, consequently the cramps were present, but less severe than where the exuded serum was too abundant to be retained in the intestines.

That there are poisons capable of coagulating the blood in its vessels, and that coagulation is attended with muscular contractions, cannot be denied. Dr. Pereira, in his last edition of 'Elements of Materia Medica,' quotes the 'Journal de Chimie Médicale,' to show the physiological effects of bromide of potassium. Thirteen grains, dissolved in water, and injected into the jugular vein of a dog, coagulated the blood, and caused convulsions and death in a few minutes. But the same medicine taken into the stomach in larger doses produced vomiting only. As a clinical fact in English cholera, it is interesting to observe how much sooner the cramps cease when the stomach does not reject fluids; for the veins are soon refilled, and thus the proportion between the crassamentum and serum is quickly restored. The so-called secondary fever of Asiatic cholera arises solely from congestion of the venous system generally, and this congestion is peculiar, the fault existing in the blood itself being too thick, from having parted with its serum, to be influenced by the action of the heart. Rigors, or rapid involuntary contractions of muscles, are seen after exposure to cold, at the commencement of most fevers, and in the first stage of ague; for the first stage of these diseases is characterized by the desertion of blood from the superficial to the deep-seated veins,

and these rigors or contractions are salutary; for by compressing the deep veins, the blood is restored to the superficial vessels, causing the phenomena of reaction. In fevers there can be nothing more alarming than the absence or prolonged delay of rigors. When scarlatina threatens to be unfavourable within twenty-four or thirty-six hours from its invasion, there are no rigors, for the muscles seem to have lost this salutary contractile power. A cramp may therefore be regarded as a painful but useful action of a muscle to assist in the circulation of venous blood.

Angina Pectoris.—No person can witness a paroxysm of this disease in a fellow-creature without a feeling of sympathy. The pain is most acute, and the alarm and distress pitiable. It is admitted that angina is a spasm of the heart, but the cause of the spasm has been attributed to almost every disease to which the heart is liable—ossification of the coronary arteries, disease of the valves, hypertrophy of the ventricles, and fatty degeneration of its substance, and certainly it has co-existed with most of those diseases; but yet, on the other hand, almost every form of heart-disease is daily witnessed, yet happily unaccompanied with angina. There is, however, no well-authenticated report of angina in an uncomplicated case of adhesion of the pericardium, and it seems anatomically impossible. Simple ossification of an artery is not a cause of cramp; there is no cramp attends Potts' mortification, for ossification rather cuts off the supply of blood, and therefore the veins must be more or less empty.

If we admit, and it scarcely can be denied, that the arrest of venous blood in a muscle is a cause of cramp, we have a very plausible explanation of the proximate cause of angina, and why it may arise from almost every disease of the heart, and yet be absent in diseases apparently similar, for it is only when there is an impediment in the circulation of the coronary veins that the phenomenon of angina is produced. Practitioners must have met a modified form of angina which occasionally attends severe cases of chlorosis, or when the circulation is languid from "relachement du cœur." Sudden pain is felt after exertion in the cardiac region, and now and then attended with pain on the inside of the left arm. This pain is quite distinct from the neuralgia of the eighth or ninth intercostal nerve, so common in the hysterical female, and from which the male sex never suffers, while it is not exempt from this angina, especially if the action of the heart be depressed by excess in smoking tobacco.

Ergot of Rye coagulates the blood. After parturition, the veins and sinuses of the uterus being full of blood, while the circulation is more languid, coagulation easily takes place; hence the muscle contracts to expel the blood from its substance. It is an erroneous idea to imagine that the ergot has a *specific* action on the uterus. On the unimpregnated uterus it has no action. It has utterly failed me as an emmenagogue. Even if pregnancy be of three or four months' duration no perceptible action is manifested, for in a few such cases I have inadvertently prescribed it, deceived by the character and representations of the patient. That it has the power of coagulating the blood is shown by mortification of the parts most distant from the heart, being the effect when it has been taken for any length of time. It is surprising how strongly impressed medical men are with the idea that after-pains are occasioned solely by

clots in the womb. Before the adoption of this opinion it should be asked how it is that the uterus, which tolerated for nine months the gradually increasing bulk of the fœtus, could be thrown into spasms from the presence of a small quantity of blood. Hydatids and moles will form, and distend it to an immense size, and yet it will be passive under their irritation.

Many facts countenance the idea that the primary cause of parturition is the coagulation of the blood in the sinuses, which is necessarily followed by muscular contraction. Ergot of rye coagulates the blood, contraction follows; small-pox kills the fœtus, the circulation ceases, contraction follows; in epidemic cholera the liquor amnios is removed, death then follows, and contractions supervene. The unimpregnated uterus is not liable to spasm.

Dysmenorrhœa.—The anatomy of the unimpregnated uterus displays its muscular fibres in a complete state of contraction; the cavity is almost nominal, and therefore a spasm or cramp of this organ is impossible. Dysmenorrhœa is not spasm, the pain is continuous, and women describe the pain as quite dissimilar from that of labour. As in such cases the menstrual fluid escapes with difficulty, the pain is probably that of distension, owing to the os tincæ being narrowed. Dr. M'Intosh of Edinburgh, relieved his patients by introducing a metallic sound, proving the correctness of his theory; and another proof is, that mothers are seldom if ever annoyed with this complaint, although previously to parturition they were monthly martyrs.

We hear frequent mention of spasms of the sphincters of the rectum and bladder, and as their veins are very small the retardation of blood could not be the cause of these local cramps. But contraction is the normal state of a sphincter, and the contraction is so complete as to resist the escape either of urine or gas; closer contraction seems impossible, rendering the idea of spasm improbable. Since the discovery that the severe pain at the anal orifice when emptying the rectum depends on ulcers and fissures of that part, spasmodic stricture of the rectum is never heard of. Sphincters have no self-dilating power; they would therefore remain permanently contracted were it not for the mechanical action of the urine and fæces escaping

The pain of cramp arises not from muscular contraction, but from the severe pressure on the nerves of sensation which traverse a muscle. Voluntary contraction is incapable of producing pain. Paraplagia and other diseases would furnish me with more abundant proofs, but enough has been stated to let the correctness of these remarks be tested.—*Lancet, June* 4, 1853, *p.* 511.

182.—SANGUINEOUS EFFUSION RESEMBLING FUNGUS HEMATODES OF THE THIGH.

By W. Tiffin Iliff, Jun., Esq., Kensington.

Mr. J. M. Y., aged 50, a gentleman of spare frame, rather bilious temperament, of temperate habits, and generally in the enjoyment of good health, came under my care on the 5th of March, 1851, complain-

ing of pain of a rheumatic character in the muscles of the upper and outer part of the right thigh. On the second visit, he directed attention to a swelling near the seat of pain; this, on uncovering the limb, was at once apparent, equal to about the half of a small apple in size, and situated at the junction of the middle and lower thirds, almost in the centre, though rather towards the outer edge of the rectus; it was deep-seated, and to the touch much resembled an enlarged bursa; it was not very movable, rather tender, and the temperature over it slightly increased; no external discoloration, no enlargement of the veins. It was now ascertained that five or six months before, he had struck the thigh against the step of an omnibus in descending from the outside, and that pain and some degree of stiffness resulted, which had never entirely subsided. He took no notice of it, however, and has since slipped down once or twice, each time the right thigh receiving a blow. Rest, evaporating lotions, and occasional leeching were ordered, but they failed to arrest its increase; frequent spasmodic action of the muscles caused severe pain and discomfort, and his health seemed beginning to be affected.

On the 17th of March, Mr. Cock's opinion was sought, my father inclining to the idea that it might be sanguineous effusion, or a collection of matter; I rather feared the commencement of malignant disease. Mr. Cock, after careful examination, advised the continuance of the soothing plan, with complete rest, hoping that it might be an abscess. Weeks, however, passed, with no improvement, but instead, more pain and spasm, increase of the swelling in length and in size, especially on the outer side, a more elastic feel, and a dubious sensation of fluctuation.

About the middle of April, Mr. Cock again saw him, and as in one spot the coverings seemed thinner, an exploring trocar was introduced, through the canula of which there passed about a dessert-spoonful of clear, greenish yellow fluid, succeeded immediately by about the same quantity of pure arterial blood, the former fluid coagulated spontaneously at once. Both were carefully examined microscopically, and nothing abnormal detected. Some little relief to the extreme tension resulted for a time.

On the 29th, Sir B. Brodie was called in consultation with Mr. Cock. His prognosis was unfavourable. He, however, referred to two cases which had occurred to him, in which an obscure swelling of similar nature had been punctured, and serum followed, but in the end matter formed, and a small piece of dead bone proved to be the exciting cause. He suggested the extract of belladonna externally, and the hydriodate of potash internally; this latter did not agree after a short trial. The swelling now slowly made its way upwards and round the outer side of the thigh, the muscular tension and spasm increased, and our patient's health seemed materially influenced; but the superficial veins remained unaltered, and no glandular enlargement could be detected.

May 20. Mr. Lawrence was called in. His prognosis was also unfavourable; indeed, when my father suggested making an incision with a lancet or scalpel, Mr. Lawrence considered it too hazardous a course. Change of air at Brighton was now tried, to improve his health if possible. He returned (after three weeks' stay in June) very much worse,

having suffered while there from bilious attacks, nausea, want of rest, &c. Mr. Lawrence, of Brighton, and his late lamented son, saw him frequently, and on one occasion punctured the swelling; grumous blood only followed, and their opinion of the nature of the case was that it was malignant disease.

Mr. Lawrence of London visited our patient again on July 4th. Mr. Y. was then sallow, features sunken, pulse feeble and irritable, appetite bad, frequent nausea and retching; the tumour extended from about two inches and a half above the patella to the same distance from the trochanter major, occupying the outer side of the thigh, and was evidently making its way under it; it was somewhat elastic to the feel, and tender on pressure, but the muscular spasm had lessened. Mr. Lawrence now expressed his conviction that it was fungoid, and said that he could not recommend any operation, as he believed the disease reached nearly to the head of the femur. Three more weeks passed, and his family, clinging to hope against hope, wished to have one more opinion, and on July 23rd Mr. Fergusson was called in. After a long and careful examination of the limb, he pronounced it to be malignant disease arising from and in the bone, and as such a hopeless case. From this time our poor patient emaciated more and more, becoming quite helpless, until September 13th, when he died, conscious almost to the last, and having for the week or two previously taken I may almost say no nourishment at all.

On examination of the limb after death, it was found that the *causa mali* was deep-seated, and surrounded in a measure by the attenuated and expanded vastus externus muscle, and that the contents consisted of about a pint and a half of thick dark blood, with a small portion of fibrine adherent to the inner side and lower part; the bone itself perfectly healthy, but at the back part the pressure had caused an absorption of a small piece of linea aspera, and some blood had crossed it posteriorly to the inner side of it. The muscular structure was healthy, and no lesion could be detected likely to have caused the hemorrhage. The body itself was not examined, and this is much to be regretted; but we had not anticipated the appearances found, and time prevented a longer investigation. The case therefore must necessarily be regarded as imperfect, as there is wanting evidence as to the condition of the viscera, and especially the liver. It is, however, not the less one of interest and moment as regards diagnosis, for though positively pronounced malignant, the muscular structure, bone, and the blood, examined microscopically, testified the contrary. As to the treatment, I will not attempt to discuss it; it was sanctioned by those whose opinions are indisputably entitled to our highest consideration. Could we have foreseen events in the early stage, an incision with a lancet perhaps might have allowed the escape of the then pent-up blood, and means might have been adopted to restrain its flow for the future, and restore the natural condition of the limb; and though there would seem to be indicated a hemorrhagic tendency,—as otherwise why should the effusion of blood continue in spite of the greater pressure,—yet, on the other hand, there was nothing to lead to a suspicion of it. During the last few weeks alone of his life, when debility and emaciation were extreme,

there existed some slight exudation of blood from the mucous surfaces, but it was not more than might naturally be expected. As the record, then, of what I believe to be a very rare case, I leave it to the consideration of others. "*Tantum valeat.*"—*Lancet, Sept.* 10, 1853, p. 246.

183.—*Case of Impending Death from the Inhalation of Chloroform; Recovery by the direct Insufflation from Mouth to Mouth, according to M. Ricord's Method.*—M. Boinet has just published, in the 'Bulletin de Thérapeutique,' the case of a lady, 30 years of age, who inhaled chloroform to escape the pain of having the forceps applied. She was short and ill-proportioned, and it had been a question whether the natural term of gestation should be waited for, or whether premature labour should be induced. The former course was adopted, but the head became locked at the outlet of the pelvis. Before the forceps were used, a cambric handkerchief, upon which about two drachms of chloroform had been poured, was held at a short distance from the patient's nose. She was soon quite insensible, without experiencing any excitement; and as the operation was being prolonged, M. Boinet desired the husband to place the handkerchief again to the patient's mouth, as she was beginning to move about, and to utter faint cries. The traction was now renewed, and the child extracted; but the husband, being engrossed by the operation and the perilous situation of his wife, left the handkerchief upon her face, though he had been recommended to take it off immediately the patient was again insensible. Just as the child was being withdrawn, the assistant, who was watching the pulse, stated that it had stopped. The cord was quickly cut, the child removed, and the windows thrown wide open. The heart had ceased to beat, the most complete relaxation of the frame existed, the pallor was extreme; in fact, all the characteristics of death had made their appearance. For five minutes, cold water, ammonia, slapping, &c., were used with the greatest solicitude, but in vain, and the patient was declared dead. M. Boinet thought, however, that he should not give up the case until he had tried the mouth to mouth insufflation. This mode of filling the lungs with air remained at first ineffectual, as the cheeks flapped back immediately the blowing ceased; bellows were also tried, but to no better purpose. And now, finally, as M. Boinet states, a few more direct insufflations were attempted; more to avoid the imputation of leaving the patient too soon, than from any hope of recovering her. These were then continued with great energy, while the assistant pressed the lower part of the thorax, to excite the diaphragm to action. At last the patient made an inspiration, which the author compares to the last gasp of a dying person; and he continued the insufflations without much hope of observing a second inspiration, as the pulse and heart were quite still. But in a few seconds a second breathing effort took place, and the patient gradually recovered, exactly as happens with those who wake from their narcotic sleep without having experienced any arrest of circulation. When the patient had quite recovered, the placenta was taken away, and she made a very good recovery. The question now arises whether this was a mere swoon, which would have been recovered from without any efforts at insufflation.—*Lancet, Sept.* 10, 1853, *p.* 248.

184.—*Phase of Dental Evolution.*—M. Hervieux read, at the Academy of Medicine, a note upon some circumstances connected with the phases of evolution of the teeth. The following are his conclusions respecting the order of appearance of the milk teeth:—

a. Inferior middle incisors.
b. Superior middle incisors.
c. Superior lateral incisors.
d. Inferior lateral incisors.
e. Canines.
f. Lesser molars.
g. Second molars.

The inferior middle incisors pierce the gum at from the 11th to 12th month; the superior middle, at from the 12th to 13th month; the lateral, about the end of the second year; thus, a child of two years should have all its incisors. The canines appear at from the 20th to 24th month; the first molars, at from the 20th to 26th month; the second molars, at from the 30th to 36th month. The evolution of the milk teeth, therefore, occupies the interval between the end of the first and of the third years. But these rules are not absolute, indeed the exceptions are very numerous.—*Med. Times and Gazette, Aug.* 6, *p.* 148.

185.—*Pityriasis Capitis.*—[Mr. J. Winzar, of Salisbury, in a note to the editor of the 'Lancet,' says,]—I have found a most efficacious remedy for this vexatious disease in the use of the following:—Take of fresh sulphuret of potash one drachm, of distilled water three ounces, mix and make a lotion, to be used daily.—*Lancet, Oct.* 8, 1853, *p.* 360.

186.—*On Distichiasis.*—The following mode of treating single hairs when inverted, by Mr. Wilde, of Dublin, is well worthy of attention:—

"In such cases, placing the horn spatula within the lid, I make an incision with a small knife down to the root of the inverted lash; and, having waited till the hemorrhage has ceased, I apply a point of nitrate of silver by means of a *porte-caustique* down to the bottom of the wound, and *then* remove the lash; it seldom fails, but frequently it destroys two or three of the neighbouring cilia."—*Association Med. Journal, March* 11, 1853, *p.* 207.

187.—*Soot as a Disinfectant.*—[Dr. Elliott, of Carlisle, says that the Local Board of Health of that city, have adopted with success a suggestion of the Rev. Mr. Dew, of St. Cuthbert's church, viz., the immediate subsequent use, in the removal of night-soil and manure, of a few shovelfuls of soot.]—*Lancet, Oct.*, 1, 1853, *p.* 325.

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